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PERFORMANCE EVALUATION OF DEVELOPMENT IN THAILAND FOR 1965

UNDER

THE NATIONAL ECONOMIC DEVELOPMENT PLAN
1961—1966

Thailand

THE NATIONAL ECONOMIC DEVELOPMENT BOARD
OFFICE OF THE PRIME MINISTER

BANGKOK, THAILAND
JUNE, 1966

17 MAY 1967

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FORWORD

Thailand's First Six-Year National Economic Development Plan (1961-1966) is coming to a close at the end of the current fiscal year. To assess major developments during the past five years, the Office of the National Economic Development Board has made a preliminary review of the performance of the economy and an evaluation of the Plan's implementation.

The Plan's targets for almost every sector have been achieved and, in many cases exceeded. Thailand's economy has demonstrated its capacity to achieve and maintain a growth rate of over 7 percent per annum which surpassed the Plan's target of 6 percent. The growth of the economy has also been accompanied by significant structural changes as a result of increasing share of output originating in the non-agricultural sectors in the Gross National Product, namely manufacturing, construction, power, trade and services. The agricultural sector has, however, developed a stronger and more diversified base as a result of the growth of both domestic and international market demands, as well as public investment in infrastructure projects.

In 1965, implementation of major public development projects in various sectors, was generally more effective than that of the previous year. Construction of several key projects were further accelerated, and some irrigation projects were completed ahead of schedule. However, there were some shortfalls and delays in implementing several projects, these include; highways, power distribution systems, telephone service, as well as the expansion programme for public health centres.

During 1965, an encouraging achievement in the public development effort was the ability of the Government to mobilize more domestic financial resources for public development expenditure than the previous year. At the same time, the actual disbursement of foreign financing was less than the amount estimated in the Plan. The decreased share of foreign financing was mainly due to the lengthy process of loan negotiations and bidding, as well as the cancellations of certain loans caused by the modification of projects and terms of the loans themselves.

This performance evaluation report was prepared by the Office of the National Economic Development Board with close cooperation from the Ministries and operating agencies concerned. Their assistance is greatly appreciated.

Prayad Buranasiri

(Prayad Buranasiri)
Secretary-General
National Economic Development Board

Bangkok
June, 1966

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PART I GENERAL REVIEW

CHAPTER I

PLAN TARGETS AND OBJECTIVES

1.1 The principal targets and objectives as stated in the Second Phase of the Six-Year National Economic Development Plan (1961-1966) were :—

(1) Raising the standard of living of the people through maximum utilization of economic resources in order to increase the national output and the income of the people.

(2) The Gross National Product (GNP) was expected to increase at an average rate of 6 percent per annum during the period 1964-1966. The Gross Domestic Product was expected to reach 77 billion baht in 1966. [1]

(3) With the population growing at over 3 percent a year, per capita income would increase to over 2,400 baht in 1966.

(4) Total Gross private and public investment (Fixed Capital Formation) was expected to account for about 19 percent of the Gross Domestic Product (GDP) during 1964-1966, or 40.6 billion baht.

(5) A 4% increase in the aggregate output of agriculture over the period. Rice production in 1966 was expected to be 9.5 million tons.[2]

(6) Structural changes in the economy were expected to continue during the second phase of the Plan with agriculture's share

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[1] The GDP estimates were revised by the NEDB in June of 1965 for the entire period 1957-1965 so that the 77 billion baht GNP target for 1966 is not comparable with the presently published data, also rice production estimates have been revised.

[2] The original 77 billion baht GNP target for 1966 when translated into the revised statistics is 85 billion baht. The 9.5 million ton rice production target when translated into the revised statistics is approximately 11.0 million tons.

in the value of total gross domestic production dropping from 36 percent in 1964 to an estimated 33 percent in 1966, while the share of industry, power, communication and transport continues to increase.

(7) Encouragement of economic growth in the private sector and acceleration of private investment. Government financial resources will be directed mainly in the creation of the basic economic and social infrastructure in order to provide a healthy environment for private sector to prosper.

1.2 The Second Phase of the Plan (1964-1966) anticipated an aggregate development expenditure of 20,000 million baht of which 70% is expected to be financed from domestic sources, and the rest from foreign financing.

1.3 This Report is an evaluation of the Plan's implementation for 1965. The Office of National Economic Development Board will be making the evaluation of the entire Plan at the end of fiscal year 1966.

CHAPTER II

THE ECONOMY AS VIEWED THROUGH THE NATIONAL INCOME ACCOUNTS

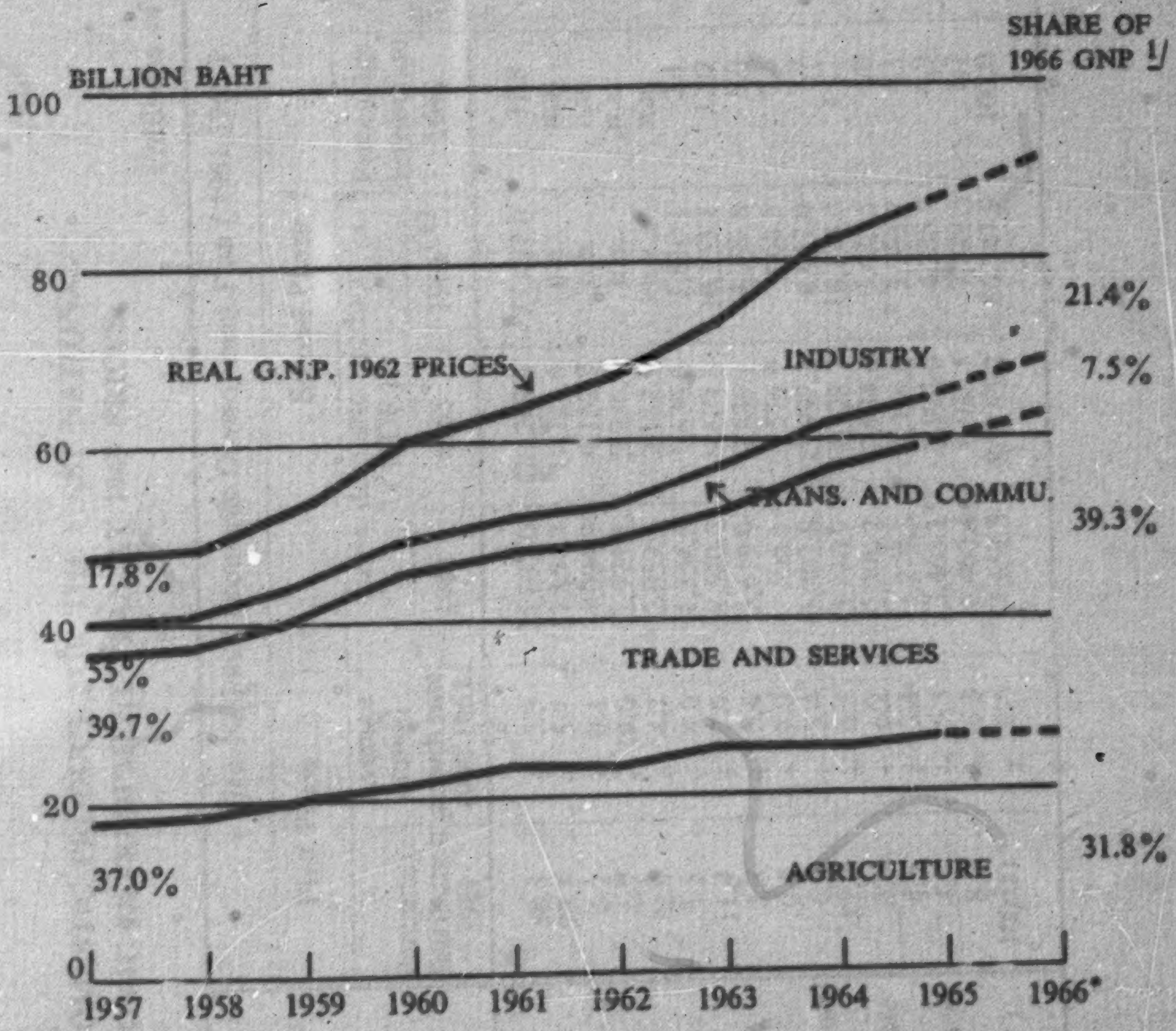
2.1 In 1965, the Thai economy has established an impressive record of economic growth which is best reflected in the National Income Accounts. At 1962 prices, the Gross National Product increased from 61.9 billion baht in 1961 to 83.2 billion baht in 1965. This represents a total increase of 34.4 % against the planned target of 30 % The annual average rate of growth of 7 % during the planned period (1961-1965) is considered high when compared to rates registered during the last decade, a rate which is more than double the estimated growth in population which is 3.2 % per year. Per capita income rose from 1,800 baht in 1957 to 2,500 baht in 1965, or in terms of real income per person it was about one-third higher than it had been in 1957.

2.2 During the course of implementing the Plan, public development outlays, particularly investment in infrastructure, have stimulated the expansion of production significantly. The increase in irrigated land and improvement of water control systems, together with the use of fertilizer have contributed to the growth rate of agricultural output and crop diversification in recent years. In 1964 and 1965 when unfavorable weather conditions prevailed in certain parts of the country loss of output was minimized becaused of these projects. At the same time, manufacturing, construction, power, trade and services were fast growing and dynamic sectors which contributed substantially to the high growth and structural changes in the economy witnessed during the past years. In fact, more than two-thirds of the growth was contributed by the non-agricultural sectors whose weight became increasingly important in the GNP.

.3 A significant structural change brought about by the Second hase of the Plan (1964-1966) was the declining share of agriculture in he GNP and increasing role of the non-agricultural sectors. Agriculture s a share of GNP declined from 37 percent in 1963 to 34 percent in 1965, nd is envisaged to be only 33 percent in 1966. The manufacturing ector increased as a percentage of the GNP from 12 percent in 1963 to 3.5 percent in 1965. The construction, mining, trade and service sectors ave accelerated at a faster growth rate than agriculture and contributed reater shares to national output. This tendency appears to have enabled he economy to diversify even further.

.4 The rapid growth of investment, in terms of the gross fixed apital formation by both public and private sectors, is visible during he Plan period. The overall level of investment as the share of the GNP xpanded from 15 percent in 1960 to 21 percent in 1965. The growth of nvestment was made possible by increased domestic saving and high oreign exchange earning through increasing exports. Since 1963 the rowth rate of capital formation has kept pace with that of GNP, both eing somewhat over 7 percent. During the period under review, personal onsumption expenditures have declined as a share of GNP, however, er capita consumption has steadly grown by nearly 4 percent per annum. This, therefore, proved that the acceleration of investment both in the private sector and public development effort did not restrain personal consumption or had any negative effect on the standard of living the people.

GROSS NATIONAL PRODUCT 1957—1965



Note:

Agriculture { Agri. crops, Livestock, Fisheries, Forestry

Industry { Mining, Manufacturing, Construction, Elect. & Water supply

Services { Banking, insurance, real estate and ownership of dwellings; Public administration, defence and services

* Preliminary estimate

1/ Shares of GNP are actually calculated for Gross Domestic Product (GDP), net income from abroad is less than one quarter of one percent.

GROSS DOMESTIC PRODUCT FOR THE FIRST NATIONAL ECONOMIC DEVELOPMENT PLAN AT 1965 PRICES

(Millions of Baht)

Line	Industrial origin	First National Economic Development Plan (1961-1966)						
		First Phase		Second Phase				
		Percentage distribution 1961	Average annual growth rate 1960-1963	Gross domestic product (GDP)			Percentage distribution 1966	Average annual growth rate 1963-1965
				1964	1965	1966$^{(e)}$		
1	Agriculture	38.3	+ 5.3	25,892.0	26,293.8	27,477.0	31.8	+ 3.9
2	Crops	27.5	+ 5.7	17,854.3	17,721.4	n.a.	n.a.	n.a.
3	Livestock	6.2	− 0.1	4,004.9	4,152.7	n.a.	n.a.	n.a.
4	Fisheries	1.7	+ 19.0	1,973.5	2,236.8	n.a.	n.a.	n.a.
5	Forestry	2.9	+ 4.7	2.059.3	2,182.9	n.a.	n.a.	n.a.
6	Mining and quarrying	1.5	+ 8.0	1,334.6	1,676.0	1,810.1	2.1	+ 11.6
7	Manufacturing	11.4	+ 7.9	8,520.2	9,684.3	10,553.4	12.2	+ 12.6
8	Construction	3.8	+ 15.4	3,619.9	3,839.1	4,299.8	5.0	+ 8.2
9	Electricity and water supply	0.5	+ 17.0	506.1	576.9	666.3	0.8	+ 17.7
10	Transportation and communication	6.5	+ 5.4	5,302.8	5,997.3	6,657.0	7.7	+ 12.6
11	Wholesale and retail trade	17.4	+ 6.5	13,880.7	14,928.7	16,123.0	18.7	+ 9.5
12	Banking, insurance and real estate	2.5	+ 16.2	2,398.2	2,934.6	3,433.5	4.0	+ 17.0
13	Ownership of dwellings	4.5	+ 3.4	3,279.3	3,394.0	3,563.7	4.1	+ 3.9
14	Public administration and defence	4.9	+ 5.3	3,463.1	3,922.0	4,235.8	4.9	+ 7.7
15	Services	8.7	+ 5.3	6,460.4	6,938.5	7,528.3	8.7	+ 6.4
16	Gross domestic product (GDP)	100.00	+ 6.5	74,657.3	80,185.2	86,347.9	100.0	+ 7.8

(e) Estimate

CHAPTER III

SUMMARY OF PRODUCTION ACHIEVEMENTS

3.1 Production achievements for 1965 in various sectors of the economy are summarized below. On the whole, the growth rate of the national output surpassed the target envisaged in the Plan.

3.2 In spite of the damage caused by drought in the northeastern region which has a relatively lower irrigation network compared with the central plain, total agricultural production has shown a favourable trend, and the paddy output has increased from 10.79 million tons in 1964 to 11.07 million tons in 1965. The expansion of production of other crops namely, maize, cassava, cotton, kenaf and mungbeans, has been phenomenal. The output expansion of these crops is based on a combination of factors; international market demand, increase in land under cultivation, construction of roads, improved seed variety, and the farmer's responsiveness to both domestic and international market demand. The output of livestock products increased slightly. Marine fishing output expanded substantially, but forestry production only had a small increase in 1965.

3.3 During the period under review, the growth of industrial output in Thailand has accelerated, particularly the output of cement, gunny bags, sugar milling and refining, oil refining, phamaceuticals, cotton textiles, and a large variety of metal product and assembling industries, in particular car assembly plants whose increase is most rapid. Some of these industries, received promotion privileges under the Industrial Promotion Act which gives tax incentives as well as other privileges to certain industrial entrepreneurs, including both Thai and foreign investors. In 1965, more than 5,000 new factories were registered making the total number of factories nearly 40,000 for the whole country.

3.4 Mining production in 1965 expanded substantially. The output of tin has risen by 20 % since 1964 under the influence of international market demand and steeply rising tin prices. The prospects for offshore mining are good in South Thailand where large deposits have been discovered by sea prospecting operations. Output is expected to reach 40,000 to 50,000 tons of concentrated ore in 1971 provided tin prices remain high. The output of other metallic minerals, especially, iron ore increased fourfold, 839,000 tons were produced and exported almost entirely during the past year. Large quantities of new deposits of iron ore were discovered in Loey. On the whole, mining activities in 1965 were quite high and the potential is excellent.

3.5 Activity in the transportation and construction sectors was growing at an accelerated rate of more than 10 percent per year. The construction industry, especially, responded well to the rapid increase in both public investment in building up the infrastructure projects as well as private demand for housing, commercial buildings, and the hotel boom in the metropolitan areas of Thailand. At the same time, industrial development together with urbanization have created increasing demand for other public utility services which have expanded substantially in the past five years.

PRINCIPAL ECONOMIC INDICATORS, THAILAND

(Physical units or values)

	1961	1962	1963	1964	1965
Population (million)	28.2	28.9	29.9	30.9	32.0
Gross national product (million baht)	59,876	65,208	68,921	74,738	80,171
Gross national product per capita (baht)	2,137	2,251	2,301	2,413	2,504
Exports (million baht)	9,997	9,524	9,676	12,339	12,872
Imports (million baht)	10,287	11,504	13,803	14,253	15,350
Agriculture; (thousand of metric tons)					
Rice	9,058	9,591	9,856	10,799	11,070
Maize	598	663	900	950	1,100
Rubber	186	195	198	211	216
Sugar-cane	3,983	3,145	3,346	4,705	3,500

	1961	1962	1963	1964	1965
Mining: (metric tons)					
Tin Ore	18,386	20,323	20,617	21,635	25,815
Iron Ore	55,793	45,308	15,743	188,638	838,936
Lignite	108,395	135,224	137,073	103,033	125,125
Gypsum	12,040	21,000	23,889	41,900	61,240
Manufacturing					
Cement production (metric tons)	800,254	967,476	997,231	1,059,136	1,247,997
Gunny bag (thousand)	8,842	10,816	23,129	33,511	39,891
Sugar (metric tons)	150,000	151,344	125,031	167,973	319,000
Pharmaceutical Products (thousand baht)	12,345	9,878	10,099	12,726	13,083
Paper (metric tons)	3,627	5,763	7,890	13,577	13,330
Tobacco (metric tons)	9,739	10,525	10,148	10,409	9,123
Transportation:					
(A) **Highway** (kilometres)					
1) Concrete and asphalt surface	3,107	3,708	3,966	4,702	5,041
2) Stone surface	1,668	1,499	1,342	1,019	853
3) Laterite surface	3,696	3,545	3,617	3,557	3,475
4) Earth roads	27	214	189	125	122
Total	8,498	8,966	9,114	9,403	9,492
(B) **Railways**					
1) Track length (km)	3,584	3,609	3,688	3,688	3,688
2) Freight cars	7,207	7,236	7,206	7,238	7,937
3) Locomotives	371	393	390	459	451
4) Passenger cars	802	800	793	774	760
Communications:					
Post Offices	302	324	344	361	391
1) Public	184	195	215	235	263
2) Private	118	129	129	126	128
Telephones	40,607	49,730	54,904	60,850	75,000
Power					
Installed Generating capacity (thousand KW)	286	292	362	548	554

CHAPTER IV

PLAN OUTLAYS AND DEVELOPMENT EXPENDITURES FOR 1965

4.1 The overall financial targets for public development expenditure of 7.0 billion baht were proposed for fiscal year 1965 in the Second Phase of National Economic Development Plan (1964-1966). The Plan had envisaged that about 3.8 billion baht of the financing of the public sector would be forthcoming from the national budget appropriation, 1.7 billion baht from foreign loans, 0.5 billion from foreign grants, and 1.7 and 0.6 billion baht from the self-financing of public enterprises and local governments respectively.

Distribution of Planned Development Expenditures

For Fiscal Years 1964 and 1965

(millions of baht)

Sector	Fiscal Year 1964	Fiscal Year 1965
1. Agriculture & Co-operatives	712.60	1,171.62
2. Industry & Mining	480.96	427.70
3. Power	870.41	642.03
4. Transport & Communications	1,981.38	2,339.24
5. Community Facilities & Social Welfare	1,263.06	1,206.90
6. Public Health	238.76	347.18
7. Education	401.03	580.90
8. Counterpart Fund	364.00	286.00
Total	6,312.20	7,001.57

Financial Implementation for Fiscal Year 1965

4.2 Despite a considerable acceleration in the implementation of public development programmes in various sectors, in 1965 the government spending of domestic resources indicated some shortfalls, and was able to spend approximately 93 percent of the budget appropriation.

However, this shows significant improvement compared with the 76 percent of the implementation of public investment programmes in 1964. This reflects an encouraging improvement in the capacity of the administrative machinery to accelerate the tempo of development activity in various sectors.

4.3 To a certain extent the shortfalls in financial implementation in 1965 could be attributable to some changes and modifications of certain projects, particularly, the highway development programme, and relative slowness in foreign loan negotiations namely for the power distribution projects, provincial roads, telecommunication zone 4 and 5, and development of vocational schools. Another notable cause for the shortfall was also due to the bidding process as well as the terms of certain bilateral foreign loans which also became bottlenecks to the execution of some public investment projects particularly in the transport and communication sector. It also appeared that the shortage of certain types of technical manpower as well as limitation of technical and administrative capacity in certain operating agencies had slowed down the rate of implementation of many projects and fell short to the targets.

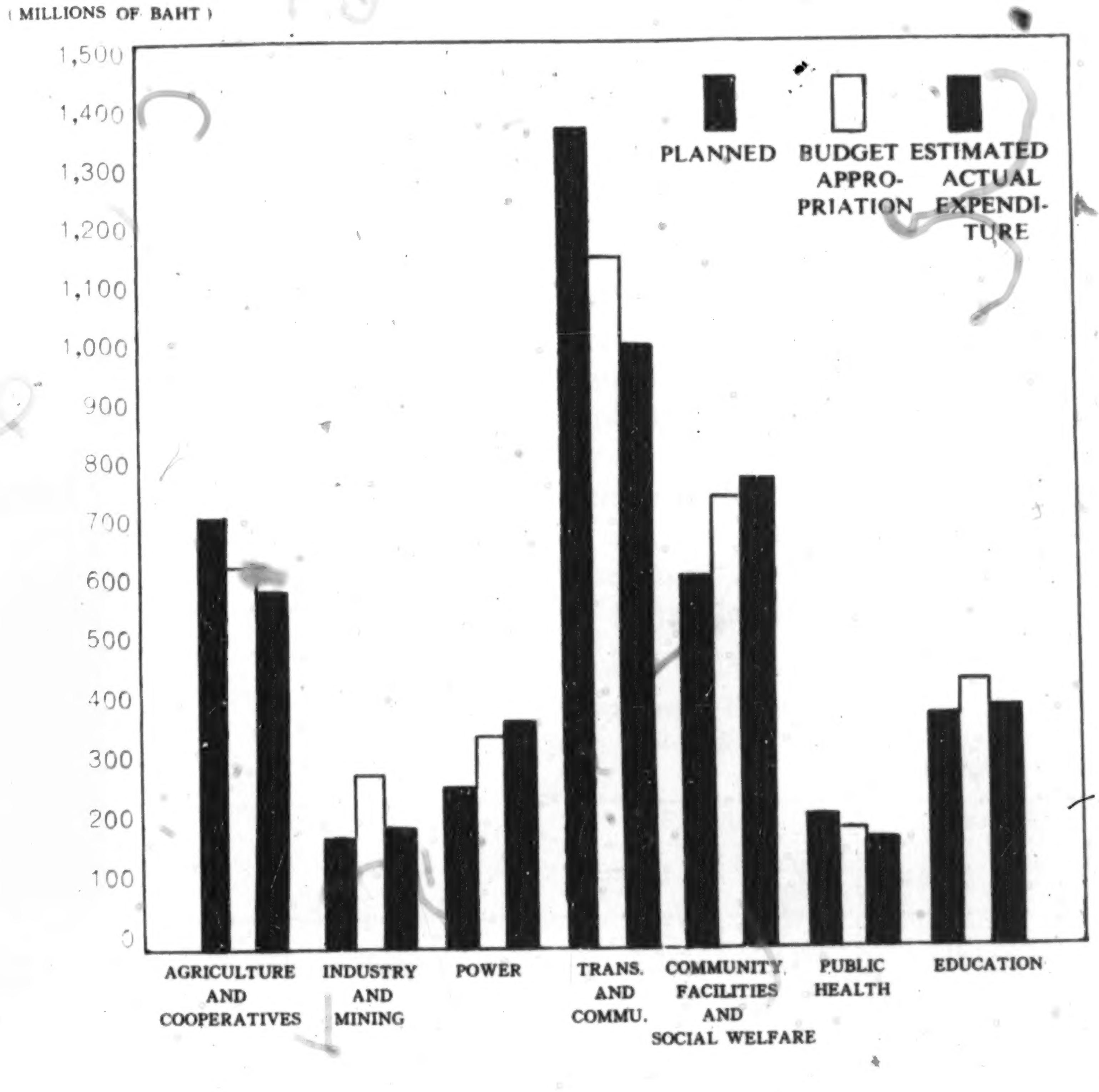
Development Expenditures during the Fiscal Years 1964 and 1965*

(millions of baht)

	F.Y. 1964			F.Y. 1965		
	Planned	Budget Appropriation	Estimated Actual Expenditure	Planned	Budget Appropriation	Estimated Actual Expenditure
A. Government Budget						
Agriculture & Co-operatives	539	527	462	701	626	594
Industry & Mining	147	181	160	183	293	200
Power	198	440	311	364	346	383
Transport & Communications	981	988	556	1,363	1,144	999
Community Facilities & Social Welfare	398	570	492	615	738	771
Public Health	186	188	159	216	203	177
Education	341	345	254	387	442	399
Counterpart Fund	150	—	—	150	—	—
Total	2,940	3,239	2,393	3,879	3,792	3,523
B. Foreign Loans	1,682	—	994	1,716	—	931
C. Foreign Grants	630	—	713	548	—	517
Grant Total	5,252	—	4,100	6,142	—	4,972

* Excluding self-financing of public enterprises and local government mobilization of domestic resources.

DEVELOPMENT EXPENDITURES DURING FISCAL YEAR 1965



Note: Excluding self-financing of public enterprises and local government mobilization of domestic resources.

Financing of Public Development Programme

4.4 In the financing of public development programmes for 1965, the most notable development was a reduction in the dependence on external sources. Financing from domestic sources was greater than was estimated at the time the Plan was formulated. About 70 percent of the total public investment programmes were financed from domestic sources as compared with roughly 60 percent in 1964. . Government saving — surplus of total revenue over non-development expenditure — rose from 1.4 billion baht in 1964 to 1.8 billion baht in 1965 as a result the exceptionally high rate of increase in government revenue. This was due mainly to the continued improvement in the level of economic activity and tightening of the collection machinery. Domestic borrowing amounted to 1.3 billion baht of which 544 million baht were from the Government Saving Bank, 493 million baht from commercial banks and 256 million baht from the public. As may be seen from the table below, which gives the relative importance of domestic and foreign resources of the financing of the public development programme, domestic borrowing was somewhat higher than the Plan's target, while foreign borrowing was substantially lower than the amount envisaged in the Plan. The decrease share of foreign financed sources reflects a cautious Thai Government policy in mobilizing domestic resources for financing economic and social development.

Financing of the Public Development Expenditure
for Fiscal Years 1964-1965

(million of baht)

	F.Y. 1964		F.Y. 1965	
	Planned	Estimated Actual	Planned	Estimated Actual
Development Expenditure Financed by	**5,253**	**4,100**	**6,142**	**4,972**
A. Domestic Sources	**2,940**	**2,393**	**3,879**	**3,524**
Government Savings	1,130	1,418	1,471	1,811
Government Bonds & Treasury Bills	800	1,064	850	1,269
Deficit Finance (Surplus—)	1,010	—89	1,558	444
B. Foreign Sources	**2,313**	**1,707**	**2,263**	**1,448**
Loans	1,682	994	1.716	931
Grants	631	713	547	517

CHAPTER V

POPULATION AND MANPOWER DEVELOPMENT

Population

5.1 The population growth in Thailand has been increasing steadily during the past five years. This demographic change can influence the national development effort, especially the standard of living of the people. According to the 1960 Census, (corrected for underenumeration), the total population of Thailand was 27.09 million. In 1963 the population was estimated to be 29.95 and at the end of 1965 was about 32.02 million. The majority or approximately 91 percent of Thailand's population live in the rural areas, the rest are urban dwellers of which about three-fourths live in the Bangkok-Dhonburi metropolitan area.

5.2 During the implementation period of the Plan (1961-1965), the population growth rate averaged about 3.2 percent per annum. At this rate, the population of Thailand will double in about 20 years. Such a rapid increase in population will certainly aggravate some existing problems, especially in raising the level of per capita national income in the future.

Labour Force

5.3 The 1960 Population Census estimated the total number of employed persons, 11 years of age and over, to be 13.7 million. The majority of employed persons, or at least 82 percent, were rural agricultural workers, 11 percent were engaged in trade and services sectors, and about 4 percent worked in the manufacturing and mining sectors.

5.4 During the period under review, the total labour force was about 16.17 million with only minor changes in the sectoral distribution. The agricultural sector still employ about 81 percent of the total labour force but contributed only 32 percent to the Gross National Product. This indicates that future increases in agricultural production will require increases in the productivity of farm labour, in addition to the expansion of land under cultivation.

Employment

5.5 No adequate and consistent statistical series are available on employment for analysis of changes in trends. The tentative estimates of the Office of the National Economic Development Board indicate that the unemployment rate in urban areas (municipal area that has more than 20,000 people) in 1965 was about 4.5-5.5 percent. This is a considerably high rate of urban unemployment, however, many observers believe that it is not yet a serious problem in Thailand. This is because the overall unemployment rate which combined both rural and urban areas was approximately between 0 to 2 percent. At this rate, there may be a high degree of underemployment in rural agricultural areas. The Office of the National Economic Development Board plans to conduct a survey of rural manpower utilization during the current year, and it will enable the NEDB to cast more light on rural manpower problems, including seasonal unemployment.

Manpower Development

5.6 The Plan has recognized the importance of manpower development and has given considerable attention to the overall manpower planning in relation to economic development. During the period under review, manpower development activities in Thailand expanded significantly. The Manpower Planning Office of the National Economic Development Board with technical assistance from AID and ILO, initiated studies of population growth, labour productivity, long-term manpower forecasts and industrial manpower utilization. An overall study of Thailand's secondary education system was jointly made by the Ministry of Education and the National Economic Development Board, and submitted to a special conference held in Chiengmai, under the chairmanship of the NEDB. This study made recommendations for many improvements in secondary education.

5.7 Another major development in education which will have an effect on manpower development was the signing of a World Bank loan for the Vocational Education Project, amounting to US $6 million. This loan will be utilized for strengthening and expanding 14 trade and industrial schools and 9 agricultural vocational schools. Another development which bears on manpower development was the official designation of a Department of Labour in the Ministry of Interior. This Department is formulating plans for increased activity in labour exchanges (employment offices), expanded cooperation with industry for on-the-job training, and improved labour welfare. Short-term training courses in a few occupational specialities are also being conducted by the Department.

5.8 Other agencies engaged in manpower development in 1965 were the Thailand Management Development and Productivity Center, and the Joint Thai—US Accelerated Rural Development (ARD) programme, which involved training of heavy equipment operators, mechanics and construction crews.

5.9 On the whole, the implementation of manpower development schemes was generally satisfactory. However, there is still a need for the accelerating of manpower planning to give guidance to the educational development in relation to the country's requirements for economic development.

PART II SECTORAL REVIEW

CHAPTER VI

DEVELOPMENT OF AGRICULTURE AND COOPERATIVES

6.1 The relative importance of agriculture in Thailand's economy has declined in recent years as a result of changes in the economic structure after the implementation of the National Economic Development Plan. Today, agricultural output accounts for 32% of the national product as compared with 40% in 1958. The percentage decrease is due mainly to the productive expansion in other sectors of the economy, namely, industry, mining, construction and trade.

6.2 However, agriculture is still the overwhelmingly dominant sector of the Thai economy generating one third of the country's national product, 90% of it's exports and approximately 80% of total employment.

6.3 The completion of many infrastructure projects played a significant part in offsetting adverse weather condition and maintaining a high level of output, but another important factor was the rapid expansion of land under cultivation, particularly, for the upland crops i.e. maize, kenaf, tapioca and rubber. Total land under cultivation has expanded by 30% since 1950. The Government's investments in irrigation, extension services, and other infrastructure facilities especially road networks, contributed a great deal to expanding agricultural production.

6.4 The total projected outlay for the development of agriculture and cooperatives during the Second Phase of the Plan (1964-1966) was 2,974 million baht, of which 2,202 million baht was expected to come from the national budget appropriation. The rest is to be financed by foreign grants and loans. A substantial part of foreign finance of agricultural development went into irrigation projects. It should also be noted that total agricultural development expenditure during the Second Phase of the Plan is about 1.3 billion baht higher than that of the First Phase (1961-1963). During the year under review, the planned outlay for agricultural development alone was 1,147 million baht, most of which was channeled toward the development of irrigation, extension services, cooperatives, forestry, and livestock respectively.

6.5 Agricultural development on the whole made substantial progress during 1965. The construction of major irrigation projects was carried out according to schedules set in the Plan. However, acceleration of work is still needed in the construction of water distribution and canal systems in order to secure fuller utilization of irrigation potential.

6.6 At present, the North and Central regions of the country secures greater economic benefits derived from public investment in irrigation. The Northeast has only limited irrigation potentials due to the fact that, the topography of the Northeast makes it difficult to accelerate irrigation development. However, sizeable irrigation benefits in this region is anticipated after the completion of the Mekong development project. As regards agricultural, fishery, and forestry extension programmes which are essential factors for expanding agricultural production, there is a need for additional qualified staff, especially, extension workers and transport facilities. The effectiveness of the extension work could also be improved by developing a closer coordination among the agencies responsible for extension and research activities.

6.7 Land development has been carried out under the responsibility of serveral departments such as the Land Cooperative Department, Public Welfare Department, and Land Development Department, and the Irrigation Department where major irrigation projects are located. During the year under review, most of the land development projects progressed satisfactorily, particularly, in the field of land classification, land improvement cooperatives, and self-settlement cooperatives. Throughout the entire land development effort, special attention needs to be given to the increase of well-trained personnel and extension workers and selection of land suitable for cultivation.

6.8 Following are the highlights of progress in the public development programme in agriculture:

Irrigation and Flood Control

6.9 During 1965 considerable progress was made in the development of irrigation; total irrigable area stood at 11.3 million rai, or about one fourth of the total land under cultivation. Breaking down regionally, the area under irrigation at present covers 45% and 36% of the total cultivated land in the Central and Northern regions respectively. The lack of irrigation systems in the South and the Northeast is reflected in the fact that only 9% and 6.7% of the cultivated area is under irrigation. This is due to unfavorable topographical conditions, there are few rivers in these regions which have irrigation potentials. The solution to this problem has been partly sought by the construction of water storage facilities and reservoirs. Ultimately, the development of the Mekong River will contribute a great deal to the irrigation possibilities in the Northeast.

6.10 The following major projects were included in the irrigation and flood control programs during 1965: the Phasom (Nan project), Mae Yom, Mae Klong Yai, Kaeng Krachan, Mae Tang, Nong Wai, Lam Pao, Lam Taklong, Lam Praplerng, Kiew Lom and Ta Chiad projects. During the period under review, notable progress has been made in the implementation of various irrigation projects. In the Central region, the construction of Kaeng Krachan project at Petchburi was accelerated and completed 8 months ahead of schedule. Preliminary work on the Greater Mae Klong Project was commenced. Both projects received loans from the World Bank, amounting to 47.6 million baht for the Kaeng Krachan, and 440 million baht for the Greater Mae Klong.

6.11 In the Northeast, construction work on the Lam Pao, Lam Ta Klong, Lam Praplerng and Nongwai (Nam pong) irrigation projects was well underway. Work on some of the projects particularly, Lam Pao and Lam Praplerng was slightly behind schedule due to delays in delivery of equipment procured under the AID loan. About 64% of construction work at Lam Praplerng and 45% at Lam Pao was completed by 1965. Preliminary work began on the Lam Ta Klong including the construction of access roads to the dam site and living quarters. The major obstacle to this project was encountered in the transfer of a 14 k.m. railroad and a section of the Friendship Highway where the Irrigation

Department had to work closely with the Highway Department and the Thai Railway Organization. During 1965 the transfer of the railway line was begun and 10 k.m. of the earth work was completed.

6.12 Steady progress was made at Nongwai (Nam Pong) irrigation scheme, which is the extension of the Ubolratana project. The initial phase of the scheme was expected to be completed on schedule by the end of August 1965.

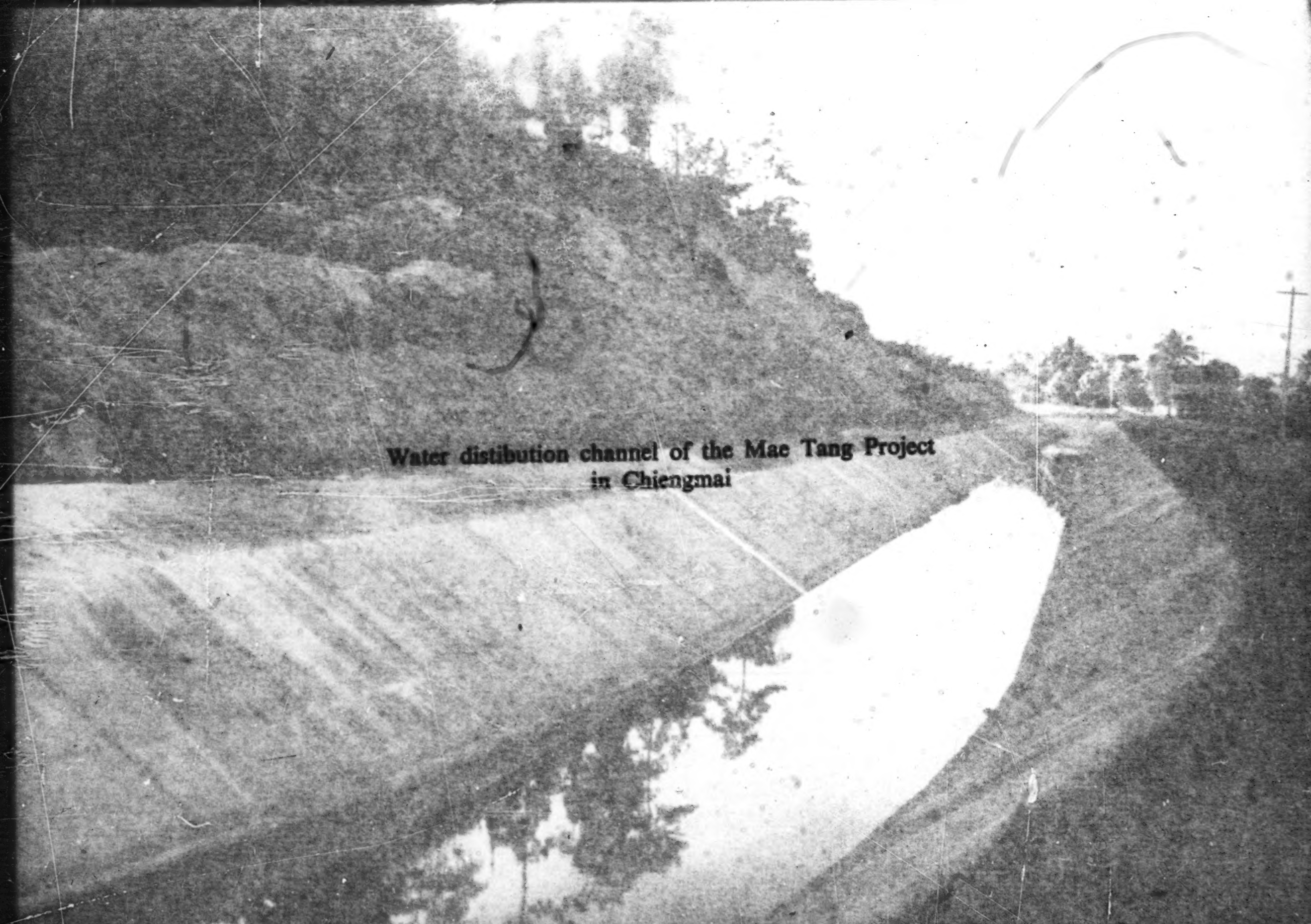
6.13 In the North, the preliminary work at Phasom multi-purpose project (Nan Project) had already been started. However, construction of the dam itself will not be commenced until the final loan agreement is reached with the IBRD. The construction of water distribution and canal system at Mae Yom Project in Prae was still lagging. The work on the Mae Tang project in Chiengmai was about 68% completed by 1965. Kieu Lom Project at Lampang was in the preliminary stage of construction during the period under review.

6.14 In the South, the Ta Chiad project at Pattalung, which was the only irrigation project in the area, was also still in the initial stages of construction.

6.15 During the period under review, an additional water storage project was completed at Huay Keelek in Nakorn Panom. Other water storage projects under construction were, Huay Pueng, Huay Fa at Kalasin, Huay Chan Tai at Roi-Ed and Huay Kaew at Surin. They are all in the Northeast region.

6.16 The ditches and dykes programme was well underway, and covered the total area of 2.6 million rai in the Central Plain. About 45% of the work on Chao Phraya ditches and dykes and 51% on the Petchburi project were completed by the end of 1965.

6.17 On the whole, during the period under review, the irrigation and flood control programme made good progress. Some problems, however, prevailed, especially the delay in the delivery of foreign procured equipment due mainly to the complicated procedure of disbursement and red tape of certain loan projects. In addition, there was also a time lag between



Water distibution channel of the Mae Tang Project
in Chiengmai

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the availability of irrigation facilities and their utilization resulting from frequent delays in the construction of water courses and field canals as witnessed in the case of Mae Yom project in the North.

Agricultural Research and Extension

6.18 Research and extension activities were expanded and strengthened in order to lay the basis for more sophisticated cultivation practices and to raise productivity. During 1965, agricultural crop research was conducted in various research and experimental stations under the Department of Rice and Department of Agriculture in order to develop better varieties of rice, rubber, upland crops and rice disease eradication. The scope of research activities in the two regional agricultural centres at Khonkaen in the Northeast and at Chainat in the Greater Chao Phraya area were expanded.

6.19 Research programmes, particularly, in improving rice varieties were well underway. However, the rubber replanting programme in the South made very slow progress, especially, among the small-holders who constitute about 90% of the estate owners. On the whole, agricultural research work was still in short supply of high level technical personnel to conduct research in many areas. At the same time there is a need for the increase in size and effectiveness of the extension staff which is still inadequate and is very thinly spread. If the recruitment goal of an additional 1,000 extension workers is reached by 1966, the ratio of agents to farm units will be only one to 3,500. The following were, the principal achievements in the agricultural research and extension programme during the year 1965:—

Rice Research and Extension

6.20 Research work on high yield varieties of rice which are suitable for particular local soil was carried on in various experimental stations. However, some of these stations are too small and, in most cases, understaffed. On the extension side, the programme included promotion of farmers groups, distribution of fertilizer, and arrangement of exhibitions in 44 provinces. In 1965, 371 additional farmer associations were established bringing the total number to 914 associations. This programme has been effective means of encouraging the farmers to help themselves and utilize the better techniques and services derived from the agricultural research effort.

6.21 Notable progress was made at the regional experimental station on new varieties of rice under the development programme of the Greater Chao Phraya area. This included experimental work on the method of planting as well as the application of fertilizer which was demonstrated to farmers on experimental plots. More competent technical staff and equipment were added to the regional agricultural centre in Chainat. Regarding the rice disease eradication work, the crop acreage treated against disease and pests was about 420,550 rai in 1965. Up to the present, there are 8 pest control units located in various parts of the country, taking care of an area of about 30 million rai. However this is still considered inadequate.

Rubber Research and Extension

6.22 During the year under review considerable attention was given to rubber research including the development of high yield trees, the promotion of rubber planting, and better methods of maintenance of rubber estates. With the cooperation of U.N. Special Fund, the Rubber Research Institute was set up at Koh Hong, in Songkla to develop high-yield trees and work on rubber technology.

6.23 In 1965, the rubber replanting scheme under the Royal Act of Assisting Rubber Planters, which has been in operation since 1961 was as a whole lagging. The official target of the scheme is to get 2 million rai replanted with high yielding varieties within the next two decades. However, by the end of 1965 only 129,690 rai were replanted. It has been difficult to accelerate replanting, partly because of the small size of the average holding, and the small holders cannot support themselves during the transitional period which normally takes about 6 years before the new trees can be tapped. Moreover, the subsidy fund (1,500 baht per rai) made available under the Royal Act for Assisting Rubber Planters was insufficient for replanting and maintenance, during the transitional period. The administration of the subsidy fund itself should also be examined carefully whether the appropriate procedure carried out and the staff is equipped to handle such a scheme.

6.24 In conclusion, the work on agricultural research and extension has to be accelerated further in order to keep pace with developments in other fields. A number of challenging tasks remain, especially, extension activities. The shortage of well qualified extension workers and transport equipment are still major bottlenecks. More attention also needs to be given to an evaluation of the impact of new production possibilities on farm income and incentives and can serve as a guideline for further improvement in research and extension activities. For this purpose, close coordination is needed between agencies responsible for agricultural research work, namely universities, operating agencies, and other research bodies.

Fisheries

6.25 In recent years, fishing output has expanded at a rapid rate as a result of the improvement in fishing techniques and equipment, and the annual catch may have exceeded natural reproduction. The most crucial problem is the danger of depletion of fish in fresh waters. The Plan thus calls for promotion and development of fisheries through various measures in the fields of fresh-water fishing, brackish-water and marine fishings.

6.26 The programmes for fresh water fishing have been designed to raise production of fresh-water fish by distribution of fries, and the conservation of large fish-breeding waters. In 1965, over 2.5 million fries were distributed by 13 fishery stations to 3,267 ponds located in various regions of the country. The promotion of fresh water fishing was accelerated through breeding and stocking programmes, through development of fish production on farms, ponds and rice paddies.

6.27 In the field of brackish-water fishing, the service stations at Prachuab-Keereekun and Chantaburi were improved and expanded. Over 157,222 Nuachan fries were distributed for raising in the area of 642 rai.

6.28 The marine fishing development project has also been extended. The government has encouraged deep-sea fishing through the improvement of fishing gear and equipment. Surveys were conducted along the West Coast to search for Pearl breeding grounds. During 1965, the Department of Fisheries also conducted surveys of fishing beds in the gulf of Thailand and in the Indian Ocean.

6.29 Agreement was reached with the Government of West Germany for the establishment of a Marine Biological Institute in Bangkok. Under this agreement the West German Government would provide technical assistance in the field of marine biological research which will be utilized for future development of marine fishing in the Gulf of Thailand. In addition equipment and scholarships for further training of Thai biologists in West Germany would be provided under the agreement, which became effective on August 1, 1965.

Livestock

6.30 Much emphasis has been placed on the promotion and extension of animal husbandry particularly for improving the quality and upgrading the local stock.

6.31 Under the livestock promotion programme, 12 livestock-breeding stations concentrated their work on breeding, disease control, and feeding particularly through improvement of animal nutrition and establishment of pasture demonstration. Progress was also made at the 92 pig breeding centres where pigs of improved breeds were distributed to the farmers to upgrade their local stock. The establishment of the Dairy Promotion Centre at Chiengmai, a Thai-German joint venture, has been established, although there was some delay in the arrival of the German technicians and the equipment for the centre.

6.32 Work on animal disease control, veterinary services and breeding contributed considerably to the livestock promotion programme as reflected in the increase of the livestock output which now account for 7 % of the total agricultural production. However, the Department of livestock should put more effort into animal husbandry and recruit more qualified staff in this field.

Forestry

6.33 Forest resources provide many benefits for the economy. In 1965, earnings from export of teak was about 200 million baht. The objective of the Plan stated that 50 percent of the total area of the country or about 160 million rai, will be conserved as forests. In addition, the future of agricultural development depends heavily on the conservation of watershed areas and soil fertility.

6.34 Forest control programmes, particularly, the forest protection and patrol units were expanded. By the end of 1965 there were 30 patrol units already established. However, the patrol efforts have met with limited success because illegal felling continued. Shifting cultivation by the hilltribes also made it more difficult for effective control. The hilltribes settlement scheme should, therefore, be strengthened further in order to ease the controlling problem.

6.35 Work on forest conservation was awaiting the result of land classification surveys so that areas which should be conserved can be specifically determined. Satisfactory progress was made in the conduct of natural resource survey to obtain data for each type of forest area as well as areas destroyed, and areas that suffered from illegal felling.

6.36 Research work continued in 4 water-shed protection stations in order to improve reafforestation. An additional 2,043 rai of teak and 7,350 rai of other timber were planted under the afforestation programme. However, the teak afforestation programme has been slow due to the shortage of heavy equipments. The work on national parks and areas for the preservation of wild life have gained momentum and will be further expanded.

Land Development

6.37 Land development includes the improvement of the land tenure system, the work on soil fertility surveys, water conservation and the promotion of optimum utilization of agricultural land. The Second Phase of the National Economic Development Plan includes several separate programmes of land development which involve the work of several ministries, particularly, the Land Development, and Irrigation Departments, Ministry of Interior, and Land Cooperatives Department. However, this section will deal only with the progress of the land development programme carried out by the Land Development Department.

6.38 Satisfactory progress was made in the land classification programme which was started in 1961; by the end of 1965, it had already covered an area of 468,270 square kilometers, and is expected to be completed by 1966. This programme after completion will identify the area which should be kept under forest reserve and that which could be developed as agricultural land.

6.39 The Plan also shows the need to conduct a soil survey analysis to determine soil fertility and its suitability for agricultural purposes. During 1965, a soil survey was conducted in the Northeast at Ubol Rajtanee, Sakol Nakorn, Nakorn Panom, in the Chao Phraya areas, Kang Krachan project areas, and in other irrigated areas covering a total area of 17.6 million rai.

6.40 Soil conservation work was further expanded by setting up two additional soil conservation centers at Ubol Rajtanee and Nakorn Panom, where research, farm planning, soil conservation demonstration will be conducted.

At present there are 7 centers located mostly in the Northeast. The Land Development Department also worked on improving the acid soils and catchy soils in various areas. However, it was still on an experimental basis and has to be developed further.

6.41 In general, during the year under review, the land development programme made good progress, particularly, in the field of land classification and soil surveys. Soil surveys for land classification will require more research efforts on a higher level. The major bottleneck for the entire land development effort is the shortage of well trained technical staff, it is therefore necessary to utilize and depend on the services of foreign experts to supplement and provide training for local staff. In addition, closer coordination should be established among the agencies responsible for land development such as the Irrigation Department, Land Cooperative Department, Public Welfare Department and the Forestry Department.

Development of Cooperatives

6.42 Many types of Land Cooperative Societies; Land Improvement Cooperatives, Land Settlement Cooperatives, Hire-purchase and Lease Cooperative, were organized in various parts of the country. By the end of 1965, there were 469 land cooperative societies with a membership of 25,490 families and with total land holding of 635,442 rai. The land cooperative movement has been concentrated in areas where major irrigation projects are located.

6.43 In the field of land improvement cooperatives, during the year 1965, some 2,600 additional families were registered as new members and an additional 46,300 rai of land was allocated, in the Central, Northern, and the Northeastern parts of the country. As for the South, there was only one land improvement society at Surat Dhanee consisting of 250 families and an area of 3,470 rai.

6.44 By the end of 1965, there were 273 land settlement societies throughout the country with the membership of 4,986 families, and about 145,462 rai of land had been allocated to the members. From close observation, it is noteworthy that land settlement cooperatives had been successfully implemented in the Central part of the country, particularly around the Sukotai area. However, throughout the entire land settlement effort, some problems still prevailed in regard to the relatively small size of land holdings and the lack of irrigation.

6.45 Other programmes of land cooperatives include the hire-purchase and lease cooperatives which aim at helping the individual member to acquire the ownership of land through hire-purchase and lease operation. Up to the end of 1965, the Department of Land Cooperative has set up 73 hire-purchase and lease cooperative societies, in the Northern, Central, and the Southern regions composed of 1,195 families covering the area of 56,741 rai.

6.46 On the whole, land cooperatives play an important role in overall agricultural development. The principal obstacles to further expansion are the low level of education of farmers, the lack of competent staff, and the inadequacy of the credit fund.

6.47 In the field of credit and marketing, cooperatives to help to create bargaining power in marketing agricultural products for the members increased to 321 societies with a total membership of 189,000 by the end of 1965.

6.48 In 1965, activities of credit cooperatives especially the fund raising cooperatives were expanded and improved with close cooperation from the Cooperative Bank which was the major sources of credit. During the first 7 months of 1965, loans amounting to 82 million baht were extended to the members. This was higher than the total loans granted in 1964 which amounted to 57 million baht. So far the credit cooperatives have provided much needed credit to the farmers amounting to 300 million baht.

6.49 In summary, the cooperative movement in various forms has been strengthened during the year under review. Nevertheless, there is still some room for further improvement. Administration needs to be improved, the shortage of competent staff is still a major bottleneck for the entire cooperative development effort. The manpower problem can be partly solved by closer coordination with other agencies in the field of irrigation and of land development.

National Agricultural Credit

6.50 Considerable progress was made in the preparation work for the opening of the Bank for Agriculture and Agricultural Cooperatives which will extend more credit to farmers. Training has begun for 90 staff members who will be working in the Bank which will be in operation in the middle of 1966.

Cotton cultivation at Nong Bua Land Settlement Cooperative
in Sukotai province

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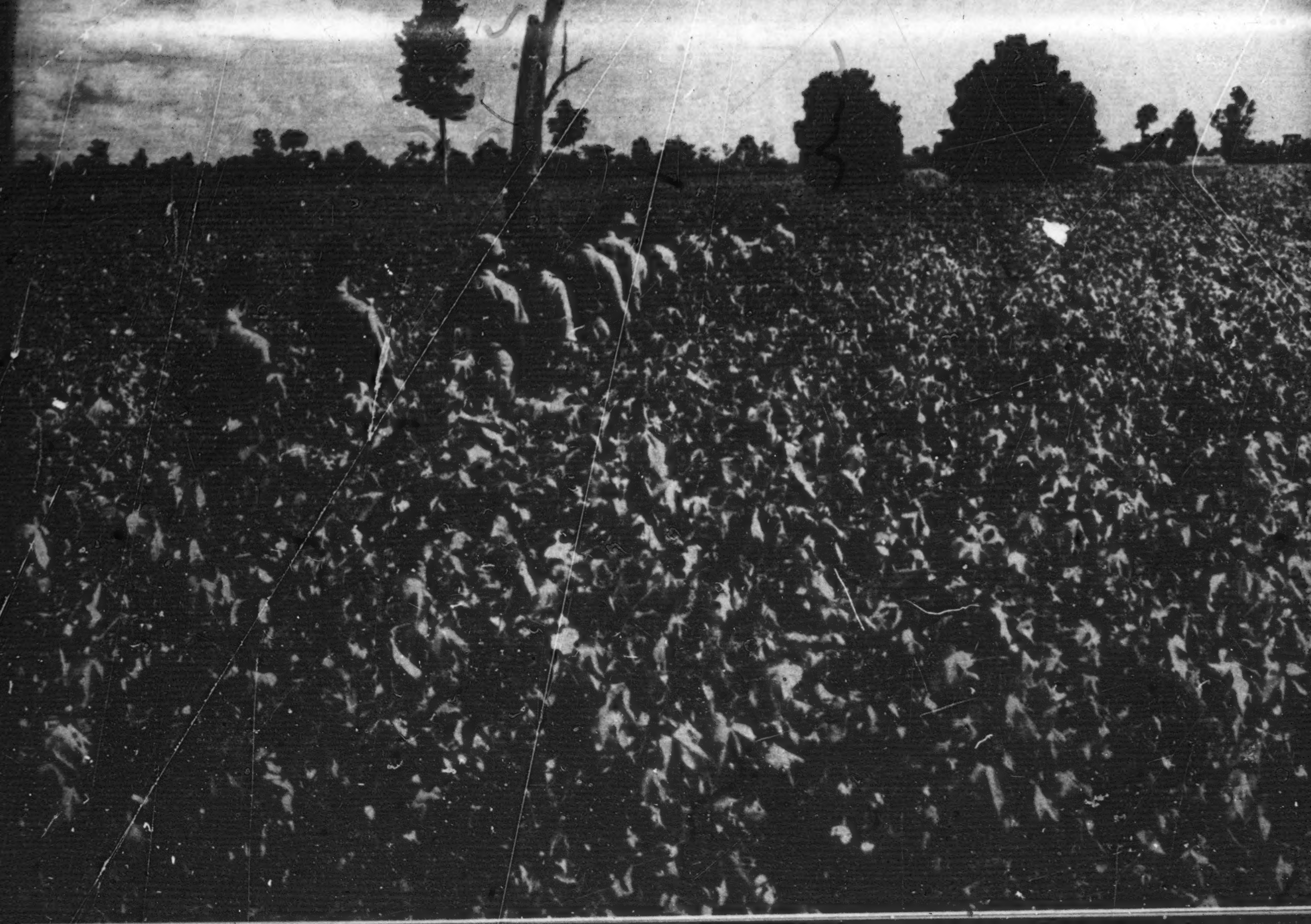

CHAPTER VII

INDUSTRIAL AND MINERAL DEVELOPMENT

7.1 One of the principal objectives of the Plan is to promote industrial expansion through private initiative. The Government's main task is to create conditions conducive to investment in industry by private enterpreneurs, both domestic and foreign. During the period under review, several measures have been adopted to facilitate the development of industry and mining. These measures include the Investment Promotion Programme, provision of technical and extension services, financial assistance in the form of industrial loans, development of industrial estates, and the establishment of several institutes to facilitate productive expansion. The availability of relatively inexpensive power was also a major factor responsible for industrial expansion. At the same time, the Government tried to improve managerial efficiency of State enterprises. These will be restricted to those already in existence, some of the less efficient ones have already been abolished. Greater reliance was placed on private enterprise in recognition of the fact that the private sector plays a key role in industrial development.

7.2 In 1965, the expansion of capacity in manufacture and mining resulted in a substantial increase in output. Manufacturing and mining combined contributed 14.2 percent to the Gross Domestic Product (GDP) in 1965. Between 1963-1965, the annual growth of manufacturing in Thailand was over 12 percent per annum, and mining over 11 percent.

7.3 According to the Ministry of Industry, there are 30,672 registered factories throughout the country, most of which are small scale industrial establishments, only 5 percent employ over 50 people. The majority of these are agriculture-based industries i.e. rice milling, tobacco manufacturing, distilleries and breweries, sugar milling and refining, and saw milling. However, nearly half of the industries which received tax incentives under the Investment Promotion Programme include manufacture of tires, metal products, chemical and pharmaceuticals, electrical and mechanical equipment, and assembly plants for automobiles, radio and television set.

Industrial Promotion

7.4 During the year, progress has been made in promoting domestic and foreign investment in the medium and large scale industries. The Board of Investment, since the adoption of the Industrial Promotion Act in 1960, issued 339 promotion certificates which gave a tax holiday and other priveleges to investors. Within this group of promoted industries, 54 percent are joint ventures between Thais and foreigners, 40 percent are wholly Thai owned establishments, and the remaining 6 percent are totally foreign owned. The total registered capital of these 339 companies amounted to 2,538.6 million baht, of which 1,685.5 million baht is local capital and 853.3 million baht represents foreign investment.

7.5 At this stage of industrial development, joint ventures between foreign investors and Thai enterpreneurs are considered favourable, especially, in large scale industries which are technogically complexed and capital intensive. In addition, emphasis has been placed on promotion of industries based on domestic raw materials, and which contribute maximum value added to the economy.

7.6 In 1965 alone the Board of Investment issued promotion certificates to 54 applicants with a total registered capital amounting to 285 million baht. Among those which received promotion privileges in previous years, 29 plants inaugurated their operations in 1965, such as the tin smelting plant in Phuket of the Thailand Smelting and Refining company which was built at a cost of 54 million baht. Others which began operations in 1965 also include the tractor assembly plant owned by the

Assembly line in the new plant of the Tanin Electronic Company, Ltd.
which received investment promotion privileges

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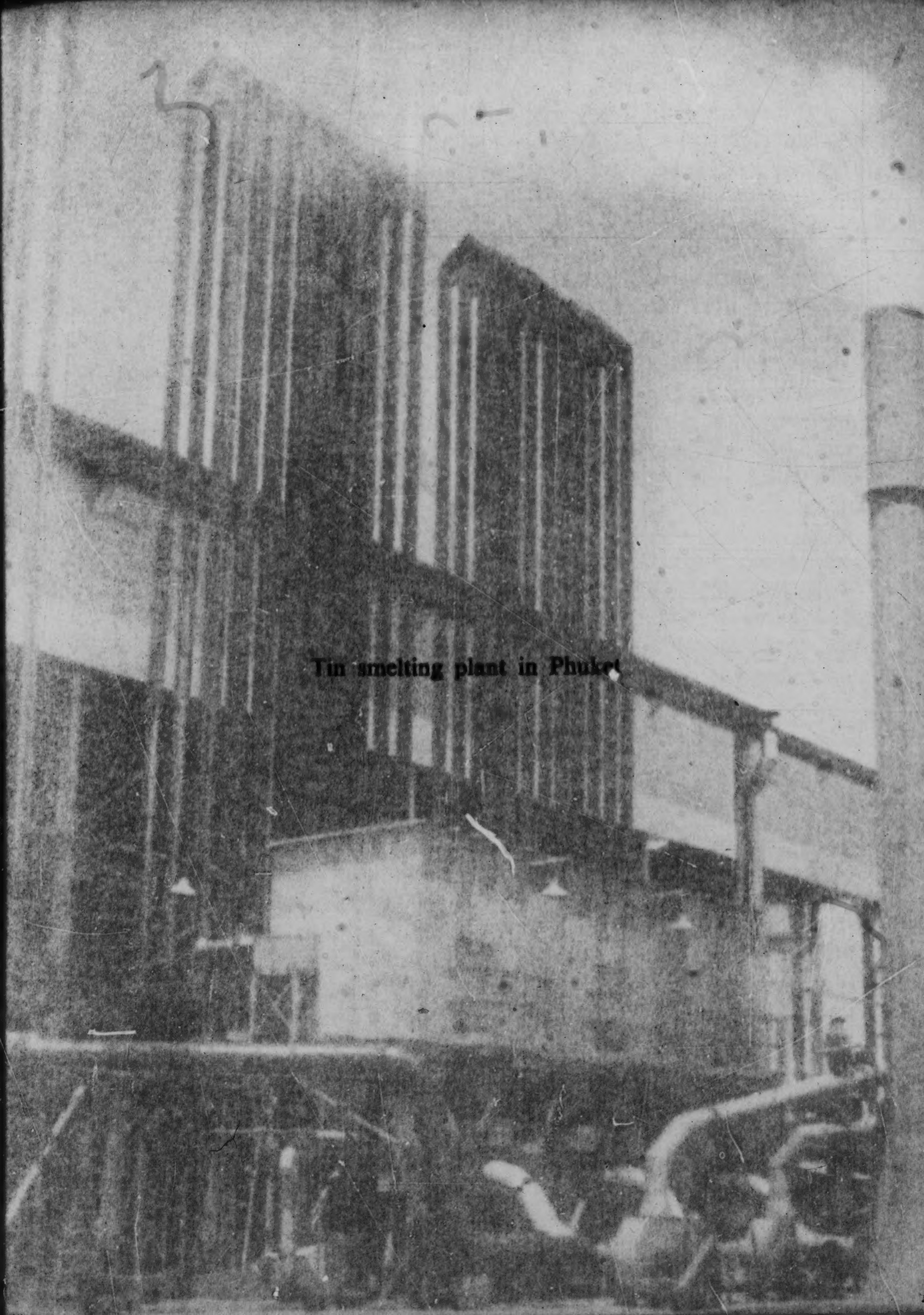
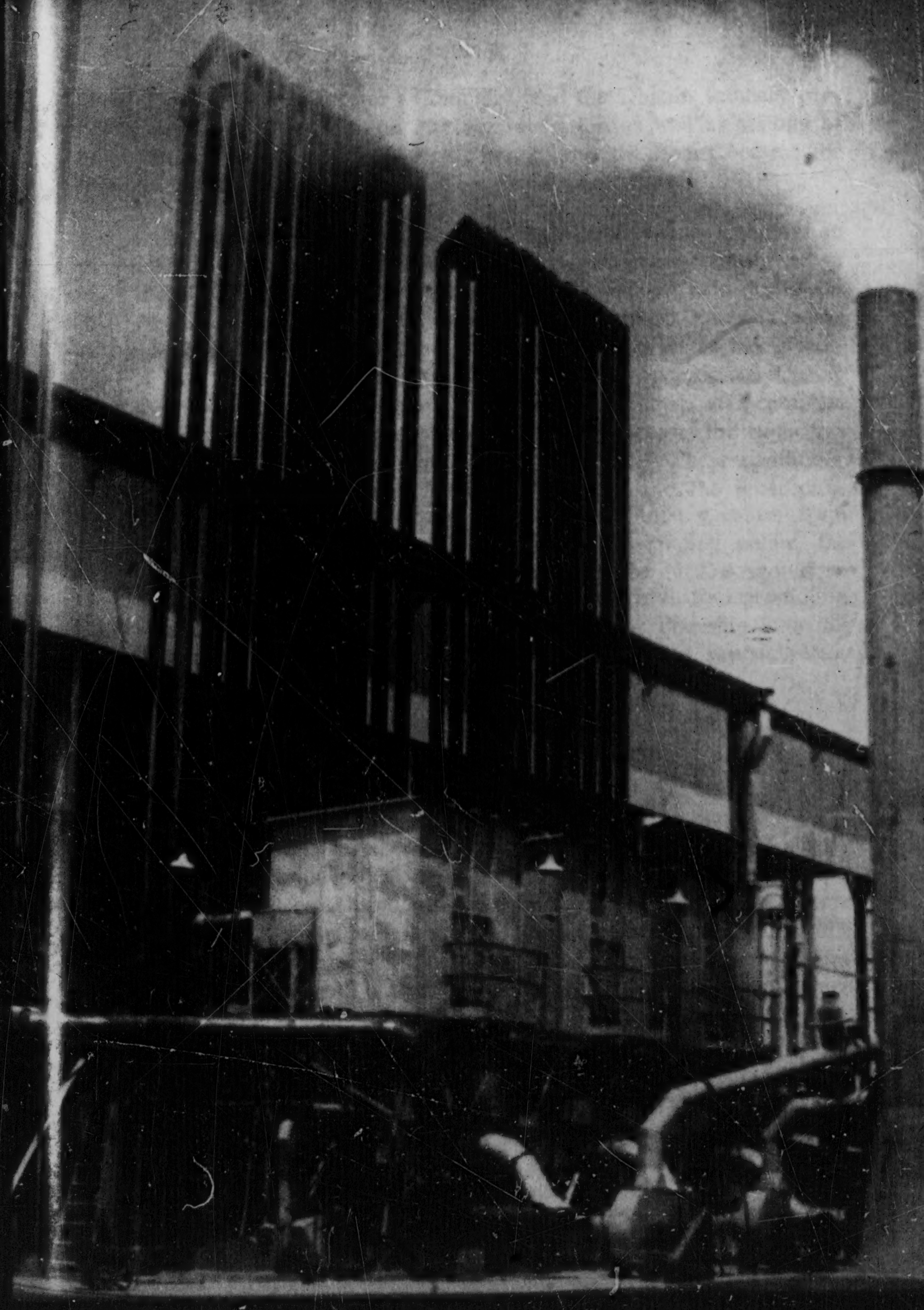


Tin smelting plant in Phuket



Louis T. Leonowens (Tractor) Company, and the Dhanin Industry producing radio sets. In addition, the administration as well as staffing of the Board of Investment were strengthened, and the Board became the Permanent agency under the Office of the Prime Minister.

7.7 In the field of industrial loans, the Industrial Finance Corporation of Thailand has made available loan funds at low interest rates, and in 1965 the IFCT granted loans amounting to 32,085,000 baht to 13 industries. The total loans in 1965 were about 20 percent lower than the previous year. However, the administration of the IFCT is being reorganized and strengthened to assure more efficient operations. During 1965, there were frequent delays in processing loans because of incomplete information furnished on loan applications and in most cases the applicants needed extensive consultation with the IFCT staff. These conditions have caused considerable delay for both the IFCT and the prospective borrowers. However, improvement is expected as time goes on from experience gained in the past. Concerning future lending policy, the functions of the IFCT, Board of Investment, and the NEDB should be closely coordinated to ensure the proper role for the industrial promotion programme, particularly, through the "Private Sector Planning Subcommittee" which has been recently oppointed to handle the private sector planning process for the next Five-Year Plan (1967-1971).

Development of Small Scale Industry

7.8 Several schemes have been implemented by the Ministry of Industry to assist small scale industries which provide a much needed complement to larger industrial establishments, and constitute a base for the future development of medium and large-scale industries. Credit facilities for small industries were established in 1964. The Loan Board has thus far approved loans to 84 small industries, amounting to 18.9 million baht since the inception of the loan scheme.

7.9 Another project to promote small scale industrialists is the establishment of a Small-Scale Industries Service Institute (SISI) which is expected to begin its operations in October 1966. The U.N. Special Fund agreed to provide financial assistance amounting to US $ 915,000 for this project which will provide technical extension and advisory services, management training, product design and market research services to the small industries. During 1965, the Department of Industrial Promotion also helped small industries in the marketing of their products by converting the Department's retail shop called "Narayana Phand" into a full-fledged marketing organization, selling handicraft and cottage industries' products. In this connection, an Industrial Product Design Center was also set up to provide design services in the field of traditional and contemporary handicrafts to any interested manufacturers.

7.10 At the Productivity Centre, almost one thousand persons were trained in the field of industrial management productivity improvement etc.

Industrial Estates

7.11 The establishment of industrial estates, with communication and other public utility facilities is considered an essential part of the programme to assist small as well as medium scale industries. This is due to the fact that the high price of land in the outskirts of Bangkok-Dhonburi is one of the obstacles encountered by small industries. In August 1964, the International Development and Engineering Acssociates (IDEA) submitted a feasibility report to the government recommending suitable sites for industrial estates. As a result of the contract agreement between IDEA and the Government, the IDEA was permitted to establish an estate. However, the Government will not acquire that piece of land and lease it to the IDEA as proposed in the report, although the government is willing to finance off-site development cost. This project is, therefore, pending. The recommended sites proposed by the IDEA would be best suited for large and medium scale industries. The Ministry of Industry, therefore, requested the U.N. Technical Assistance Board for a team of experts to undertake a pre-investment survey to determine whether it will be feasible to set up industrial estates for small-scale industries in Bangkok and Dhonburi.

Mining Industry

7.12 The Plan emphasised the development of mineral resources since their exploitation is essential to the continued growth of the economy. In 1965, the export earning from tin alone amounted to 1,164 million baht compared with 883.7 million baht in 1964, and at present is the fourth largest export after rice, rubber and maize. Total production of concentrate reached 25,815 tons in 1965 and is expected to reach higher levels in the future, if the world price is maintained. Another important step in the development of the tin industry in Thailand was the opening of the tin smelting plant in Phuket in August, 1965 with a smelting capacity of 27,000 tons per year. The output of other mineral products, namely, manganese, lignite, and iron ore also increased, particularly, iron ore which increased fourfold reaching a total of 838,980 tons in 1965. The Department of Mineral Resources together with Krupp of West Germany undertook a survey of iron ore at Lopburi and discovered a reserve deposit of approximately 6 million tons of ore. Further detailed tests will be carried out this year. On the whole, the prospect for the mining industry appears promising, export earnings from tin alone should be more than 1,000 million baht annually during the next 3 or 4 years.

7.13 During the period under review, the Department of Mineral Resources continued undertaking geological surveys and expeditions in the North and Northeast regions. A number of surveys were also carried out including marine surveys to determine the size of tin reserve deposits in Southern Thailand, these included Surat Dhani, Nakorn Srithamarat, Phuket and Takuapa. In addition, under the auspices of the Lower Mekong Development Committee of the United Nations, mineral surveys were conducted in the district of Loey, searching for lead, cooper, zinc and manganese with promising results. At the same time, the American prospecting firm, the Union Ore Company, has carried out sea prospecting operations by making random prospectings and found some deposits of tin off the east coast of Phuket toward the Pangnga and Takuapa areas.

CHAPTER VIII

DEVELOPMENT OF POWER

8.1 Since the implementation of the Plan, notable progress has been made in the development of power. The installed power generating capacity has almost doubled from 286,630 kilowatt in 1961 to 554,260 kilowatt in 1965. The increase in public generating capacity during the Second Phase of the Plan can be mainly attributed to hydro sources which generated 146,300 kw; 140,000 from the Yanhee Multi-purpose project and 6,300 kw from the Nam Pung Project in the Northeast.

8.2 Despite the steady increase in the power generating capacity, work on the transmission and distribution system still lagged behind; in particular the first and second stages of the Yanhee distribution system in the North and Central regions, and that of the eight-province Krabi distribution system in Southern Thailand. The construction delay can be attributed to a large extent to the lengthy process in loan negotiations with the West German Government. In future, diversification of loan sources should be persued for distribution facilities. To remedy the shortfalls, a temporary plug-in system is being used until the loan negotiations are finalized, and a complete revamped system will be constructed. However, in the metropolitan area of Bangkok and Dhonburi, the change over to the revamped system has been completed according to the plan.

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Hydroelectric power generators of the Multi-purpose Nam Pung Project in the Northeast

CHAPTER VIII

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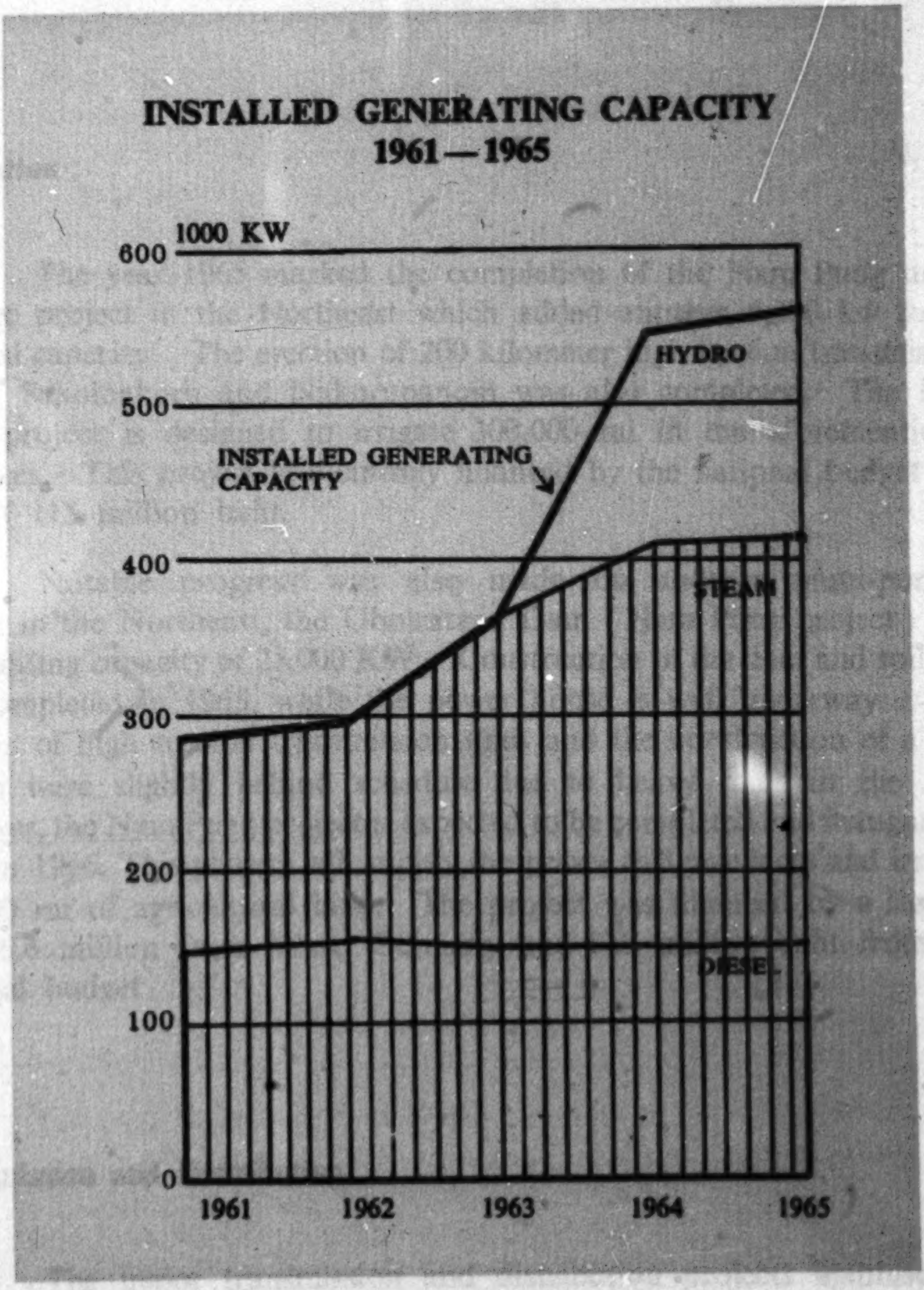


INSTALLED GENERATING CAPACITY
1961—1965

electricity authorities into a single administration. The Judicial Council is now reviewing the case in order to legalize the establishment of this new electricity authority.

Generation

8.4 The year 1965 marked the completion of the Nam Pung multi-purpose project in the Northeast which added another 6,300 kw to the national capacity. The erection of 200 kilometer high tension transmission line to Sakolnakorn and Nakornpanom was also completed. The Nam Pung project is designed to irrigate 300,000 rai in the aforementioned provinces. This project was entirely financed by the national budget at a cost of 115 million baht.

8.5 Notable progress was also made on another multi-purpose project in the Northeast, the Ubolratana Dam (Nam Pong project) with a generating capacity of 25,000 KW. Construction of the dam and spillway was completed in 1965, while the power house is well underway. The erection of high tension transmission lines and the construction of a sub-station were slightly behind schedule due to heavy rains in the area. However, the Nam Pong project is expected to be completed and inaugurated early in 1966. This project will supply the power to 8 provinces and irrigate 250,000 rai of agricultural land. The project was financed by a loan of DM 56.6 million from West Germany and 126 million baht from the national budget.

Transmission and Distribution

8.6 The major transmission and distribution projects involved the construction and improvement of the lst and 2nd stages of the Yanhee

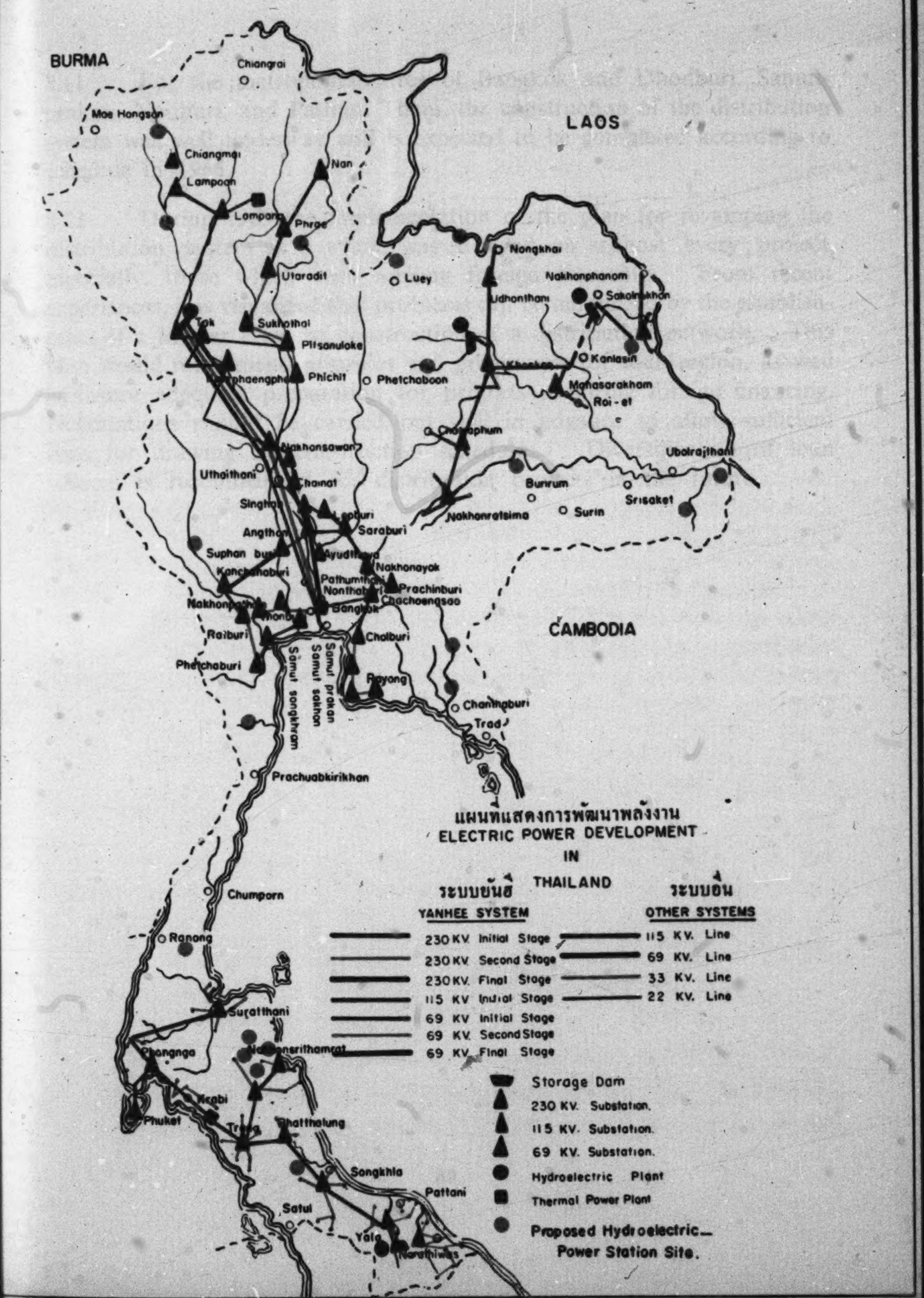
Project, the distribution systems for the Nam Pong (Ubolratana Multi-Purpose Project), Nam Pung projects, transmission network in the vacinity of the Krabi project, as well as improvement of the distribution system in the metropolitan area of Bangkok.

8.7 In the Northern and Central regions, the first stage of the Yanhee Project, involving a complete revamped system for 12 provinces in the Northern and Central regions, was further delayed due to the lengthy process of loan negotiation. However, a loan agreement amounting to DM 13 million was finalized with the West German Government in March 1965. This project is now expected to be completed in 1967 instead of the original schedule for a completely revamped system which was to be finished by 1965.

8.8 Under the second stage of the Yanhee Project which covers 11 provinces in the Central and Eastern regions, a temporary plug-in system was built in Rajburi, Sam Pran, Ban Pong, Petchburi, Sukhotai in order to meet the urgent demand for public power. The permanent revamped system will be constructed as soon as a loan of DM 21 million from West Germany is finalized. This project is about two years behind schedule and will not be completed before 1969. The delays were mainly attributable to excessively long periods of negotiation to obtain foreign loans for financing the project.

8.9 In the Northeast, the construction of a distribution system under the Nam Pung project covering Sakolnakorn and Nakorn Panom was on schedule and will be completed in 1967. This project was financed by the Provincial Electricity Authority (PEA) from its own earnings. But the construction of the Nam Pong distribution system was also behind schedule due to the delay in loan negotiations. The PEA has just signed a loan agreement of DM 11.2 million with the West German Government in October 1965. This project is expected to be completed in 1967.

8.10 In the South, the construction of a permanent revamped system in 8 provinces under the Krabi project — Krabi, Pang Nga, Puket, Trang, Nakorn Sridhamraj, Surat, Pattalung, and Songkhla — is also awaiting the outcome of a DM 17 million loan from the West German Government. However, a temporary plug-in system is being used for the above mentioned area.



แผนที่แสดงการพัฒนาพลังงาน
ELECTRIC POWER DEVELOPMENT
IN
THAILAND

BURMA
LAOS
CAMBODIA
Chiangrai
Mae Hongson
Chiangmai
Lampoon
Lampang
Nan
Phrae
Utaradit
Luey
Nongkhai
Nakhonphanom
Udhonthani
Sakolnakhon
Tak
Sukhothai
Pitsanuloke
Phichit
Phetchaboon
Khonkaen
Kanlasin
Mahasarakham
Roi-et
Kamphaengphet
Chaiyaphum
Nakhonsawan
Uthaithani
Chainat
Ubolrajthani
Burirum
Srisaket
Surin
Nakhonratsima
Singburi
Lopburi
Saraburi
Angthong
Suphan buri
Ayudthaya
Kanchanaburi
Pathumthani
Nakhonayok
Nonthaburi
Prachinburi
Nakhonpathom
Thonburi
Bangkok
Chachoengsao
Raiburi
Samut songkhram
Samut sakhon
Samut prakan
Cholburi
Phetchaburi
Rayong
Chantaburi
Trad
Prachuabkirikhan
Chumporn
Ranong
Surathani
Phangnga
Nakhonsrithamrat
Krabi
Phuket
Trang
Phatthalung
Songkhla
Pattani
Satul
Yala
Narathiwas
ระบบยันฮี
YANHEE SYSTEM
230 KV. Initial Stage
230 KV. Second Stage
230 KV. Final Stage
115 KV Initial Stage
69 KV Initial Stage
69 KV. Second Stage
69 KV Final Stage
ระบบอื่น
OTHER SYSTEMS
115 KV. Line
69 KV. Line
33 KV. Line
22 KV. Line
Storage Dam
230 KV. Substation.
115 KV. Substation.
69 KV. Substation.
Hydroelectric Plant
Thermal Power Plant
Proposed Hydroelectric Power Station Site.

8.11 For the metropolitan area of Bangkok and Dhonburi, Samutprakan, Nonburi, and Pathum Thani, the construction of the distribution system was well underway and is expected to be completed according to schedule in 1966.

8.12 During 1965 the implementation of the plan for revamping the distribution system as a whole was delayed on almost every project, especially, those which were seeking foreign financing. From recent experiences, it is visualized that problems can be minimized by the establishment of a Master Plan for construction of a distribution network. This plan would recommend priorities and preferences for each region, as well as insure adequate preparation for projects requiring foreign financing. Negotiations should be carried out well in advance to allow sufficient time for drawing up construction schedules. Diversification of loan sources is recommended for distribution projects in the future.

CHAPTER IX

DEVELOPMENT OF TRANSPORTATION AND COMMUNICATIONS

9.1 The Plan contains many transportation and communications development projects which were directed at the rehabilitation and improvement of existing facilities. During the Second Phase of the Plan (1964-1966), Government outlays for the development in this sector was planned to be 6,292 million baht which represents about 30 percent of total public development expenditures. However, in 1965, the actual development expenditures were less than the amount estimated in the Plan, especially, on highway development. This delay was mainly caused by the revision of the highway construction and rehabilitation programme. In addition, many highway projects that were financed by the IBRD, Export Import Bank, and A.I.D., totaling 1.4 billion baht, were slow to get underway owing to some administrative problems and delays particularly in the bidding process. No actual disbursements were made of loans for the construction of the Bangkok-Sriracha highway nor the other two roads under the IBRD loan in 1964. The shelving of the second commercial airport project also contributed to the shortfall in actual development expenditure in this sector.

9.2 The progress of various development programmes for transportation and communications during the period under review were as follows:

Communications

9.3 The emphasis in 1965 was placed on improving the efficiency and modernizing the communication system, to meet the demands of the rapidly growing economy of the country. Project implementation in this sector was generally satisfactory.

9.4 In Bangkok and Dhonburi, the public has witnessed the erection of 12 postal centres during the past year. In other provinces, the Post and Telegraph Department transfered 30 additional provincial post office of its direct responsibility.

9.5 Satisfactory progress was made in the development of provincial telephone service which aims to install telephone lines to an additional 43 provinces. Between 1961-1965 the Telephone Organization of Thailand (TOT) has already installed 24,200 telephone lines in 30 provinces and 10 amphurs. There were some difficulties and delays in the procurement of telephone equipment from abroad.

9.6 By the end 1965, the installation of micro-wave systems for inter-regional communication already covered three-fifths of the country, namely, complete installation of telecommunication system in zones 1,2, and 3. The preliminary work began on zones 4 and 5 (Northern and Southern regions). The work included building access roads and other facilities. Actually, construction in zones 4 and 5 began behind schedule due to miscalculation of costs and difficulties in securing a new loan. A contract for a loan of DM 25 million was finally signed in September 1965. The main construction work should begin right after competitive bidding in March, 1966.

9.7 Even though the installation of backbone micro-wave toll system for inter-regional communication was 60% accomplished in 1965 (telecommunication zones 1,2, and 3), the local telephone service is still a bottleneck and the value of the microwave system connot be fully realized until this is overcome. Bangkok now has one of the lowest ratios of phone to population of any city in the Far East with a comparable level of economic development. A plan for further expansion of investment is already underway in order to improve service and increase the number of telephone in the near future.

Transportation:

National Highways

9.8 During 1965 the implementation of the highway development programme consisted of rehabilitation and improvement of existing roads, engineering surveys and designs, and construction of new highways. During this period the total highway network was 9,492 kilometers, of which only 60 percent or about 5,041 kilometers was all-weather concrete and asphalt paved, the rest being laterite or earth surfaced.

9.9 The execution of several highway projects began very slowly with delays caused by; the formulation of a new 7-Year Highway Programme (1963-1971), slowness in administration, particularly in selecting contractors and in bidding. In some cases conditions of foreign financing forced the Highway Department to cancel the loan.

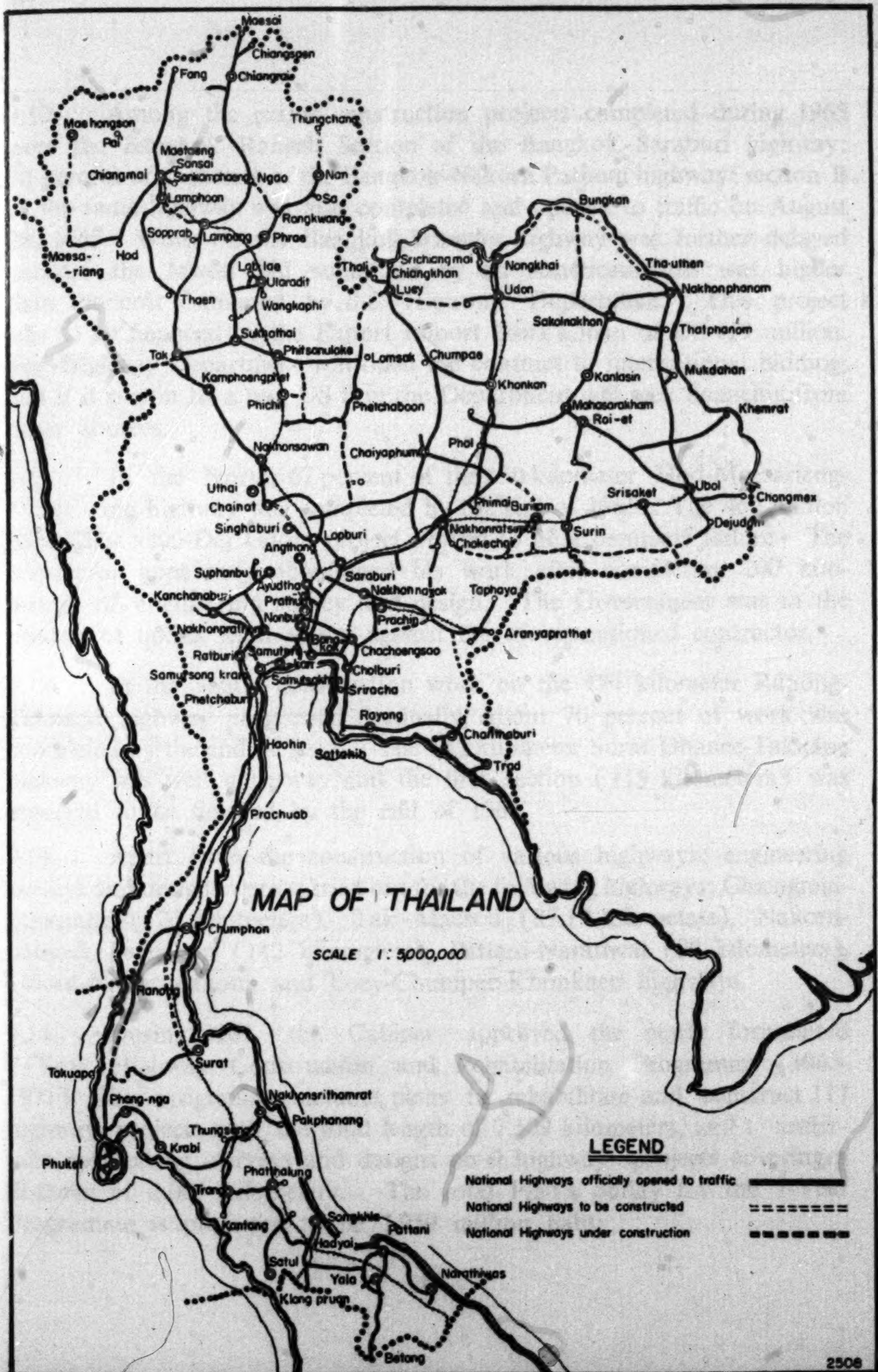
HIGHWAY 1961 — 1965
(Kilometres)

	1961	1962	1963	1964	1965
1. Concrete & Asphalt	3,107	3,708	3,966	4,702	5,041
2. Stone surface	1,668	1,499	1,342	1,019	853
3. Laterite & Earth roads	3,723	3,759	3,806	3,682	3,598
Total	8,498	8,966	9,114	9,403	9,492

Source : Highway Department.

HIGHWAY — 1965

		(Kilometres)
1. Concrete	60%	71
Asphalt		4,970
Stone surface	40%	853
Leterite & Earth roads		3,598
Total		9,492



MAP OF THAILAND

SCALE 1 : 5,000,000

LEGEND

National Highways officially opened to traffic	▬▬▬
National Highways to be constructed	========
National Highways under construction	▬ ▬ ▬ ▬

Maesai
Chiangsaen
Fang
Chiangrai
Thungchang
Maehongson
Pai
Maetaeng
Sansai
Chiangmai
Sankamphaeng
Ngao
Nan
Lamphoon
Sa
Rongkwang
Sopprab
Lampang
Phrae
Maesa-riang
Hod
Laplae
Uttaradit
Thaen
Wangkaphi
Sukhothai
Tak
Phitsanuloke
Lomsak
Kamphoengphet
Phichit
Phetchaboon
Nakhonsawan
Uthai
Chainat
Singhaburi
Lopburi
Angthong
Suphanburi
Ayudthaya
Kanchanaburi
Prathum
Nonburi
Nakhonpathom
Bangkok
Ratburi
Samutsakhon
Samutprakan
Samutsong kram
Phetchaburi
Haohin
Prachuab
Chumphon
Ranong
Surat
Takuapa
Phang-nga
Nakhonsrithamrat
Pakphanang
Thungsong
Krabi
Phuket
Phatthalung
Trang
Kantang
Songkhla
Pattani
Hadyai
Satul
Yala
Narathiwas
Klang pruan
Betong
Saraburi
Nakhonnayok
Prachin
Chachoengsao
Cholburi
Srirocha
Rayong
Sattahip
Chanthaburi
Trad
Taphaya
Aranyaprathet
Nakhonratsima
Chokechai
Phimai
Buriram
Surin
Srisaket
Ubol
Chongmex
Dejudom
Chaiyaphum
Phol
Khonkan
Mahasarakham
Roi-et
Kalasin
Khemrat
Mukdahan
Thatphanom
Nakhonphanom
Sakolnakhon
Udon
Nongkhai
Tha-uthen
Bungkan
Srichiangmai
Chiangkhan
Thali
Luey
Chumpae
2506

9.10 Among the major construction projects completed during 1965 were the Bangkok-Rangsit Section of the Bangkók-Saraburi highway; 50 percent of section A of the Bangkok-Nakorn Pathom highway; section B of the same highway was also completed and opened to traffic on August 28, 1965. Work on the Bangkok-Sriracha highway was further delayed because the lowest bid submitted by an American firm was higher than the cost estimated by the Highway Department. This project was to be financed by the Export Import Bank's loan of US $19 million. The Highway Department will open the contract to international bidding, and if it is won by a non-US firm the Department will seek financing from other sources.

9.11 In the North, 67 percent of the 150 kilometer Hod-Maesarieng-Maelaluang highway was completed by the end of 1965. The 460 million baht Chokechai-Dej Udom project proved to be a complete failure. The contractor apparently abandoned his work after completing 200 kilometers of engineering survey and design. The Government was in the process of taking legal action against the aforementioned contractor.

9.12 In the South, construction work on the 174 kilometer Ranong-Takuapa highway progressed gradually, about 70 percent of work was completed by the end of 1965. The 145 kilometer Surat Dhanee-Takuapa highway was well underway and the first section (115 kilometers) was expected to be finished by the end of 1965.

9.13 Apart from the construction of various highways; engineering surveys and designs were carried out for the following highways; Chiengmai-Lumpang (120 kilometers), Tak-Maesod (87.19 kilometers), Nakornpathom-Pechaburi (112 kilometers), Pattani-Naratiwat (99 kilometers), Udorn-Nakornpanom, and Loey-Chumpae-Khonkaen highways.

9.14 During 1965, the Cabinet approved the newly formulated 7-Year Highway Construction and Rehabilitation Programme (1965-1971). This programme includes plans to rehabilitate and construct 117 highway projects with the total length of 7,509 kilometers, and t undertake engineering surveys and designs on 9 highway projects covering a distance of 2,009 kilometers. The total Plan's outlay for the 7-Year Programme is projected to be 7,959 million baht.

Railways

9.15 Railway development was mainly concentrated on improving the efficiency of passenger and freight service rather than substantial extensions of the existing network. In 1965, the State Railway added another 60 diesel locomotives and 1,640 freight cars to the rolling stock, and renovated major railroad yards in various parts of the country. In addition, construction work on the 260 kilometer Kaengkhoi-Buayai line, which began in 1963, was about 60 completed. This project was financed by DM 45 million loan from West Germany together with a budget allocation of 180 million baht. This line, when completed will facilitate the flow of goods to and from the Northeast.

Water Transportation

9.16 Satisfactory progress was made on the survey of the volume of river traffic which was undertaken by the Harbour Department. A survey of coastal transportation was also underway and expected to be completed by December 1965. Information derived from these studies will be used for the formulation of a water transport development programme in the future.

9.17 Dredging operations at Kantang harbour in Southern Thailand has begun in December 1965 and is expected to be completed by the end of 1966. This port will thus be able to accomodate large coastal vessels (up to 600 tons) without waiting for high water.

9.18 The port of Bangkok, through which 90 percent of the country's foreign trade pass, has become increasingly congested over the past years. Excluding the bulk of petroleum products, the volume of traffic has increased by 75 percent since 1958. Preliminary studies conducted by the U.N. Special Fund on the potential for improving the physical capacity and operating efficiency of the Port, indicates that an investment of about 250 million baht may be called for over the next four years, apart from dredging outlays. At the same time the eventual establishment of a supplementary sea port on the eastern coast would help to relieve congestion and would greatly benefit the economy.

Air Transportation

9.19 Civil aviation facilities have been improved during 1965. The air traffic control facility at Rayong was overhauled and a new aeronautical radio control station was set up at Pattani in Southern Thailand.

9.20 Construction of the eastern runway at Don Muang Airport to relieve traffic congestion was well underway. Sections one and two of this runway were completed on schedule. However, construction work on section three was slightly delayed due to the heavy traffic created by the location of the U.S. Airfreight Terminal Apron near the runway.

9.21 The Civil Aircraft Overhaul and Maintenance Workshop at Don Muang was also expanded in order to service planes on both domestic and international flights. During this year, construction of the all-weather runways at provincial airports at Pitsanuloke, Lumpang and Chiengrai were completed. Preliminary work at Hua-Hin airport was also started. An engineering survey was carried out for the Haad-Yai airport.

CHAPTER X

DEVELOPMENT OF COMMUNITY FACILITIES AND SOCIAL WELFARE

10.1 The implementation of development programmes in the fields of public welfare, public utilities and community development are reviewed below:

Community Development

10.2 Community development was further extended into remote areas of the Northeast and South. Community development workers stationed in various villages have tried to encourage people in these rural areas to raise the level of their agricultural productivity and hygiene. It is expected that community development activities will be further accelerated and extended to as many districts (Amphurs) as possible in the future.

10.3 In 1965, community development programmes were introduced to five more provinces with a total population of 312,546 in the Northeast, and one amphur in the South with a population of 47,353. Since its introduction in 1962, community development has reached 15 provinces and 33 districts in the Northeast, 4 border provinces and 11 districts in the South, and 4 provinces in the Central region.

Public Welfare

10.4 The major projects under implementation include the Self-help Land Settlement Scheme, the Hilltribes Development Centre, Subsidized Housing for Low Income Groups, and slum clearance programmes.

10.5 For Self-help Land Settlement Scheme, 2,873 families were alloted land during 1965. This was less than the target which envisaged that at least 6,000 families would be moved into new lands. Work was concentrated on improving the condition of the forty existing settlements. A land survey was completed and the selection of 3,300 families was underway for their settlement in 3 provinces of the South-Naratiwat, Satool, and Yala.

10.6 Resettlement was completed for approximately 1,500 families to the Hod district from flooded areas above the Bhumibol Dam. However, this scheme encountered several problems including; the small size of each holding (5 rais per family), unsuitability of the land for cultivation in many areas, no irrigation systems, in addition there was some misunderstanding about the method of payments to compensate the settler who were evacuated from the flooded areas. The Government has taken steps to improve the situations. More than 2,200 families were evacuated from the flooded areas above the Nam Pong Dam in Khonkaen and Lum Pow Project in Kalasin, and moved into resettlement areas provided by the Government.

10.7 For the Hilltribes development programme, 10 mobile hilltribe development units were set up to assist and guide the hilltribes to settle in certain areas. Approximately 571 families have moved into these settlement areas. In addition, a Hilltribe Research Centre was established within the compound of Chiengmai University to conduct research into their languages, and customs.

Subsidized Housing for Low Income Groups

10.8 In 1965, the Public Welfare Department constructed six additional blocks of flats around the Din Daeng area of Bangkok to accomodate 336 families. This was only a fraction of the total housing projects in metro-politan areas. The Government is trying to encourage privae investment in the low-income housing development schemes.

Public Utilities

10.9 The Plan calls for the establishment and improvement of provincial waterworks by setting up 19 new projects and expanding 72 existing ones. However, work on the new projects need to be accelerated to meet the target envisaged in the Plan. In addition, the drilling of artesian wells in the rural areas has also been slower than expected in the Plan.

10.10 The improvement and expansion of waterworks in the metropolitan areas of Bangkok and Dhonburi was completed in 1965, but proved to be inadequate for the constantly increasing demand. The Government is now drafting a new long-term plan for waterworks and a town planning act which are expected to be passed in 1966.

CHAPTER XI

DEVELOPMENT OF PUBLIC HEALTH

11.1 The broad objectives of public health programmes embodied in the Six Year Development Plan are to promote the general health of the population and to improve and expand facilities for medical care. During the Second Phase of the Plan (1964-1966) development expenditure for public health have been increased to more than 900 million baht. About 30% of this amount will be derived from foreign aid and loans. A substantial part of development expenditures were used to finance the Malaria Eradication Project and the Provincial Hospitals and Health Centres. The major obstacle in the development of public health was the shortage of medical personnel. Provision for their training has, therefore, to be made in order to produce adequate medical personnel to meet future requirements.

11.2 Progress of the principal programmes for public health development during 1965 is documented below.

Medical Sciences

11.3 Eighty-three provincial hospitals are operated by the Ministry of Health. The Plan called for an improvement of medical services through the expansion of existing provincial hospitals. During the year under review the following facilities were added to existing hospitals: 10 additional wards, 7 obstretric buildings, 3 surgery and x-ray buildings. A total of 60 doctors and 200 nurses were also added to these hospitals. In addition, the construction of another 25 bed hospital at Amphur Yasothorn, Ubol Rajdhanee, was completed and expected to start operation by 1966.

11.4 The Plan provided for the conversion of three provincial hospitals into Regional Hospitals. These hospitals are located in Pitsanuloke in the North, Nakorn Rajasima in the Northeast and Songkla in the South each with 450-500 beds, and with specialists in various fields of medical services and modern equipments. Satisfactory progress has been achieved in this direction. By the end of 1965, 1,172 beds had already been added in the three provincial hospitals.

Number of Beds in the 3 Regional Hospitals

Hospitals	1963	1964	1965	1966
Putachinaraj Hospital	330	380	430	450-500
Nakorn Rajasima Hospital	300	350	400	450-500
Songkla Hospital	142	270	342	450-500

11.5 During 1964-1966, the Plan also calls for the improvement and expansion of the three hospitals under the direct control of the Department of Medical Science these are, the Lert Sin Hospital, the Women's and Children's Hospital and the Buddhist Priest Hospital. The number of beds will be raised from 1,960 in 1963 to 2,210 in 1966 and the number of doctors and nurses to 148 and 554 respectively in 1966. At the end of 1965, there were 2,000 beds, 123 doctors and 404 nurses in these hospitals. In addition a nurses residential building was constructed in the Women's and Children's Hospital, and an Administrative building was constructed in the Lert Sin Hospital. The general improvement was also made at the Buddhist Priest Hospital. In the field of cancer treatment and research, work on the Cancer Institute progressed satisfactorily. The number of persons who came to get a preliminary cancer examination increased.

11.6 Mental Hospitals were also expanded by the addition of 150 beds, bringing the total to 5,785 beds. The major obstacle to further expansion was the shortage of doctors in various fields of specialized study.

Sanitation

11.7 Implementation of sanitary programmes was accelerated in the fields of disease control, improvement and extension of provincial health centers, and improvement of environmental sanitation.

a) Control of Infectious Diseases

11.8 During the year under review, effective measures were undertaken to bring the relatively high incidence of tuberculosis under control. Tuberculosis tests were conducted in the three already existing Chest Clinics at Bangkok, Chiengmai and Khon Kaen to approximately 346,000 persons of which 11,877 persons were found infected. The mass B.C.G. campaign was also continued, and approximately 370,170 persons were vaccinated. In the South, the work on the construction of another Chest Clinic at Yala was completed. However, the work on an additional Chest Clinic in Bangkok was further delayed because there has been no definite decision as to the site of the clinic.

11.9 Notable progress was achieved on the malaria eradication programme which aimed to reduce malaria transmission to a low level in the major areas of infection. In 1965, the budget allocation for this programme amounted to 20 million baht. Since the programme has been inaugurated, periodic DDT spraying has continued, covering an area with a population of about 19.3 million. In addition, a training course has been offered to 7,000 malaria eradication personnel and 160 health officers.

11.10 A scheme for the control of filariasis was undertaken in Nakorn Sridhamraj and Patthalung. An "active case" test was given to 69,758 persons of which 50,326 were found infected. During 1965, the leprosy treatment service was also extended to Kampaengpet and Prachuab Keereekun in which 2 additional leprosy control units were established. At present, leprosy control units were extended to 26 provinces giving treatment to 65,045 persons.

b) Improvement and Extension of Provincial Health Centres.

11.11 The objective of the scheme for the improvement of health centres is to convert the second-class centres into first class health centres in every amphur. In 1965, twenty second-class health centres were converted into first class-health centres and 9 additional first-class health centres were constructed with funds derived from local contributions. Presently, there are 190 first class health centres and 788 second class health centres. The major bottleneck for the extension of provincial health centres is the shortage of medical staff, especially doctors. It is difficult to attract them to rural area because of inadequate compensation for the loss of income from private practice as well as other amenities such as unsatisfactory working conditions and poor residential accommodation.

c) Improvement of Environmental Sanitation

11.12 During 1965, considerable progress was made in the development of local sanitation. Improvement was made in 1,970 village bringing the total villages in which sanitary improvements have been made to 7,000. Additional school health mobile units were also established in urban and rural areas to supervise health services to school children.

Medical Research

11.13 Research into; indigenous medical plants, food and drug analysis, diagnostic laboratory examination and other general fields was conducted in the National Public Health Laboratory during the year under review.

11.14 In summary, the public health development programme experienced satisfactory progress. The shortage of medical personnel is, however, still a major shortcoming for the entire public health development effort. To cope more effectively with this problem, the government has been contemplating measures to control the number of doctors who go to practice abroad.

CHAPTER XII

DEVELOPMENT OF EDUCATION

12.1 Development of education is a prerequisite to economic development. The National Economic Development Plan places much emphasis on the formulation of education policy in accordance with national manpower requirements. During the Second Phase of the Plan, the outlay for educational development was estimated at 1,800 million baht. About 20% of this amount will be derived from foreign aid and loans.

12.2 There follows a review of the salient features of progress during 1965.

Primary Education

12.3 In order to give a good elementary education to all children it is the Government's policy to strive for the improvement and expansion of elementary education (Prathom 1-4) and in due course of time to increase the length of compulsory education from 4 to 7 years. The expansion of elementary education is of paramount importance since the number of children in pre-school age groups are steadily increasing. However, there are many critical problems which make it difficult for such expansion. One of the important deficiencies is the lack of classrooms. Most of the existing elementary schools are the Prachabarn schools run by the Government with very few private schools. Other problems include the lack of qualified teachers, teaching equipment as well as the high rate of absenteeism among students which poses considerable concern for the quality of the elementary education programme already existing.

12.4 The year 1965, witnessed progress in the development of primary education; 253 additional Prachabarn schools were established along with the increase of 3,500 teachers. Apart from the improvement of the 4 years compulsory education program, efforts have been made to extend compulsory elementary education from 4 to 7 years, in order to achieve the goal established by the Karachi Plan of seven year compulsory education by 1980. In 1965, the enrollment in all of the elementary schools was approximately 4,844,129 students of which about 4,644,040 were studying in the lower compulsory elementary schools (Prathom 1-4).

Secondary Education

12.5 Work on the improvement of secondary education continued during 1965. The "comprehensive" schools have been established in various locations on a pilot basis and if successful will be permanently integrated with the secondary school system. In 1965, 5 comprehensives schools were established with the preparation being made for the opening of six additional schools in 1966. With the number of students rising at an increasing rate, private schools have contributed on an increasing scale to national education, especially at the secondary level. During the year under review an additional 160 private schools were established. At the end of 1965, the total enrollment in the secondary schools was 305,623 students of which approximately 138,386 were in private schools.

12.6 The improvement and expansion of secondary education is of paramount importance since it serves to strengthen the manpower base required to meet the urgent needs of a developing economy. Today the proportion of students who completed Prathom 4 and continue their studies in secondary schools is about 20 : 100. If we consider Prathom 5-7 as elementary education, the proportion will be about 8 : 100, which is relatively low. Hence, the expansion of secondary education by the establishment of more secondary schools is urgently needed. Also, there should be an improvement in academic standards particularly in Science, English, and Mathematics. A major step towards the upgrading of educational standards has been made by the establishment of comprehensive schools. Further expansion of these schools is nevertheless limited by the lack of funds, as well as qualified teachers and equipment.

Vocational Education

12.7 Development of vocational education has rated top priority to fill the needs of national economic and social development programmes. During 1965, considerable progress has been made in raising the standard of many of the vocational schools by the improvement and expansion of their training facilities, including work-shops, school buildings as well as teaching staff. Moreover, under the sponsorship of of UNICEF, improvement was made in the management of women's vocational schools. During the year under review, a preliminary survey has already been conducted in 35 women's vocational schools.

12.8 During 1965, a loan of 120 million baht was negotiated from the IBRD for the improvement of 25 vocational schools, in accordance with the programme for the development of vocation education. This programme, during the first phase of operation will cost 440 million baht.

12.9 As of the end of 1965, there were 193 vocational schools and technical colleges which enrolled 43,800 students with a total of a 5,187 teachers under the direct control of the Department of Vocational Education. However, the development of vocational education still encountered many critical shortcomings. One of the major bottlenecks was the unpopularity of vocational education in the rural areas of the country. Other problems include the lack of qualified and experienced teachers, of buildings, work shops and other essential equipment and facilities.

12.10 The number of teachers still falls short of the present requirements. During 1965, acceleration of work has been made in the improvement and expansion of teachers' training programmes in order to increase the number of qualified teachers.

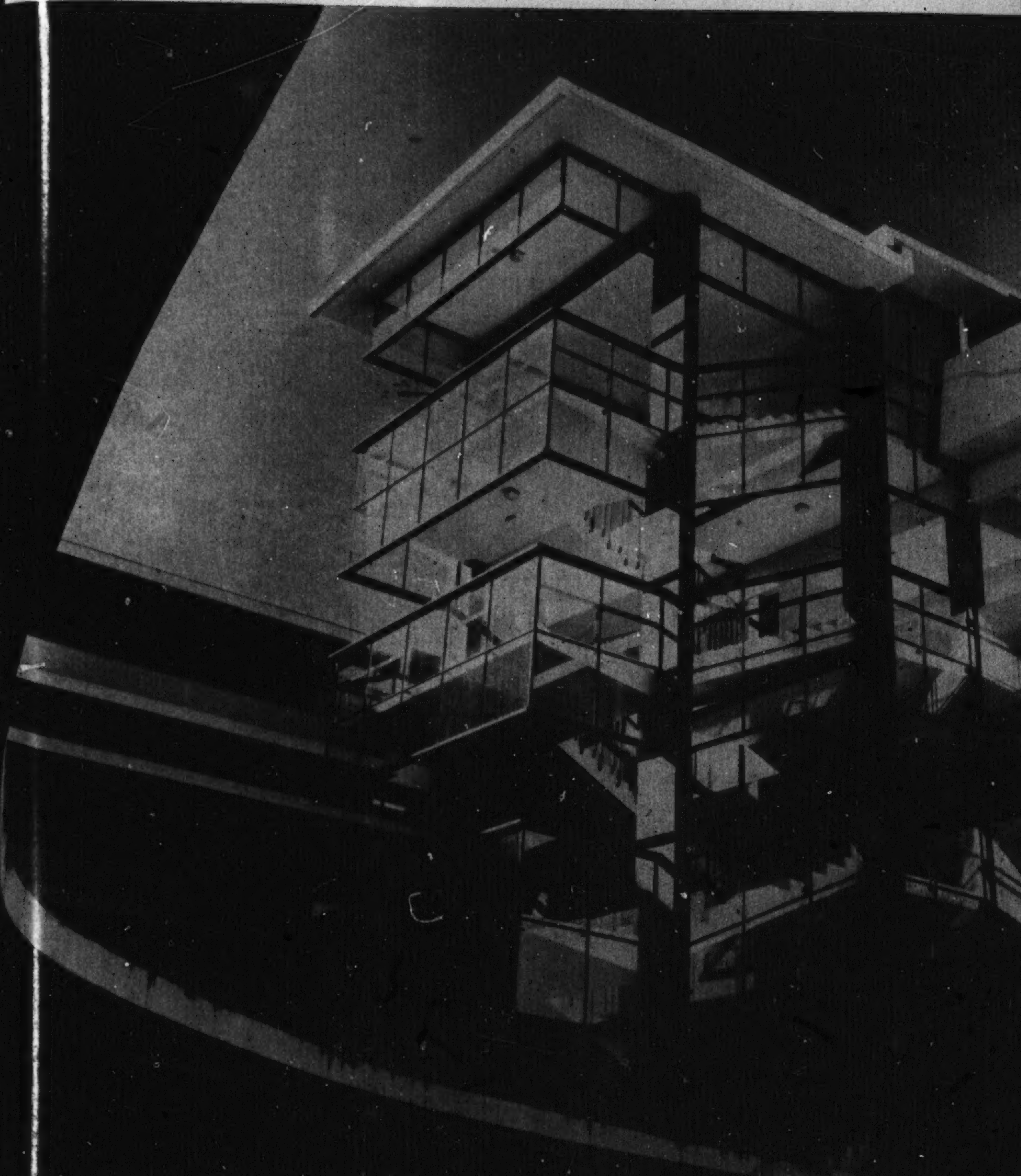
12.11 In 1965, the Department of Teacher Training graduated 29,220 certificate as well as degree holders in education. In service training was also given to provide better qualified certified teachers.

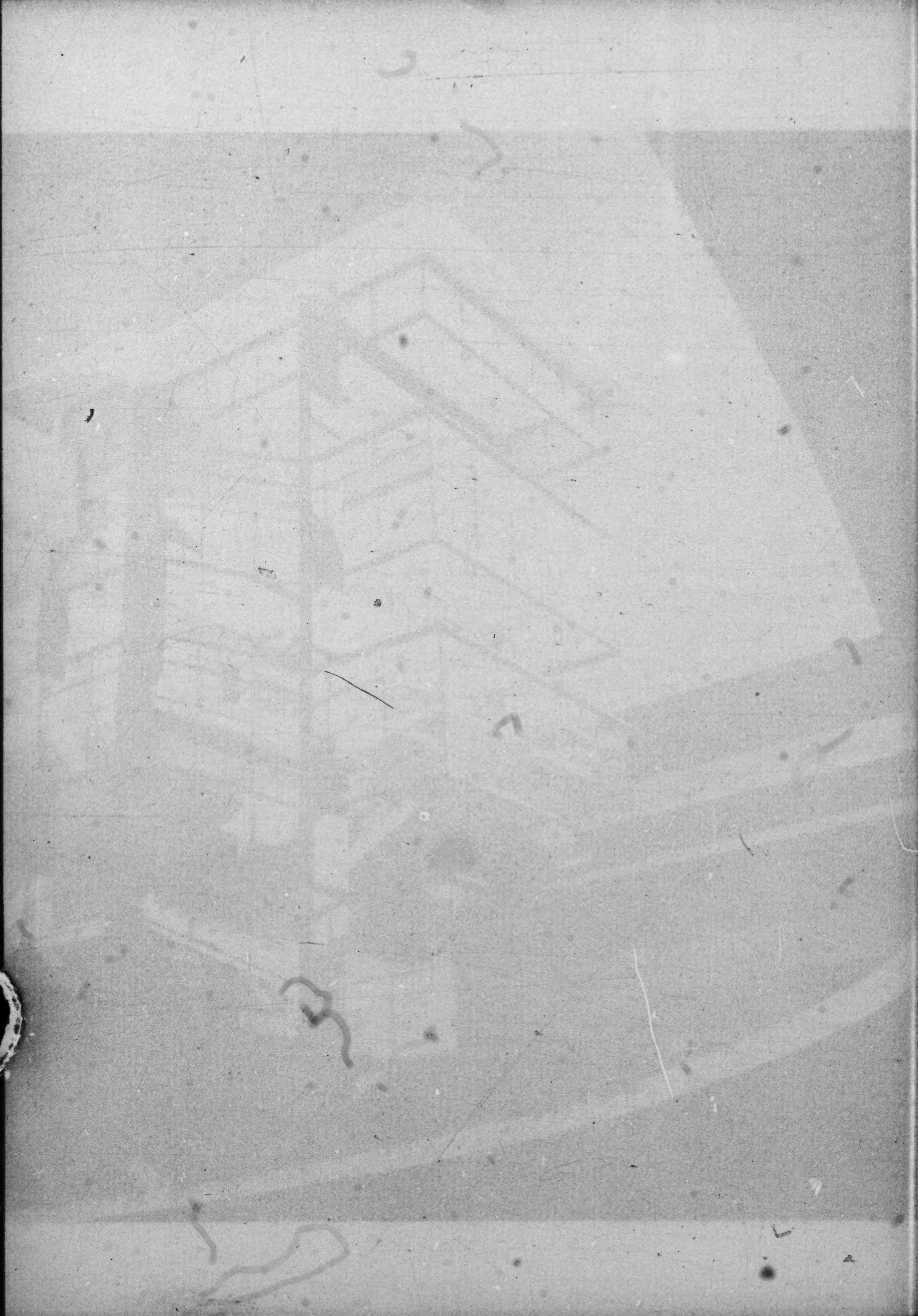
University-Level Education

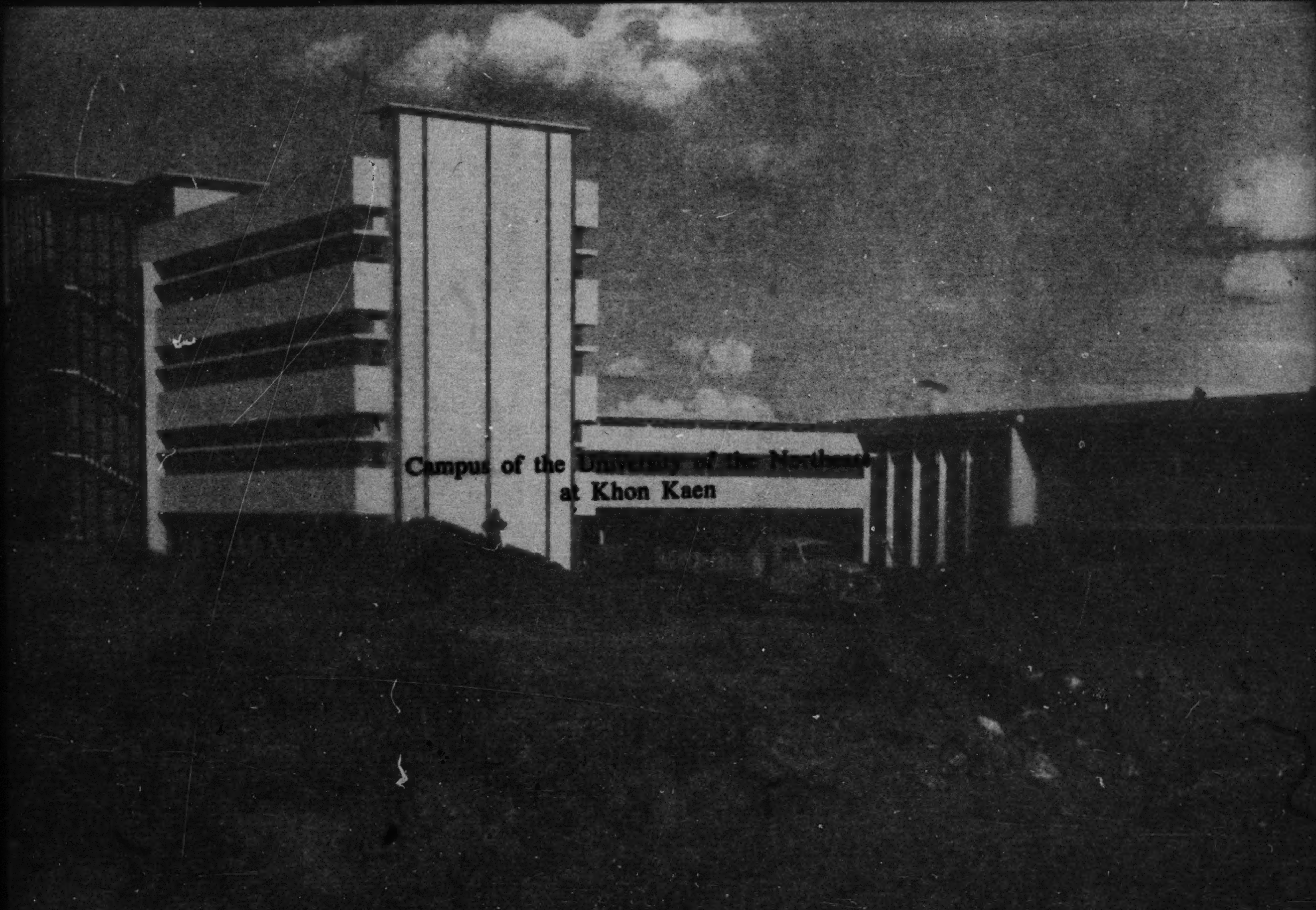
12.12 Major achievement in the development of higher education was marked by the decentralization of high education to regions outside Bangkok, to include Chiengmai and Khon Kaen. In addition preliminary work on the establishment of another University in the South, at Pattanee was also in progress.

12.13 During 1965, Chiengmai University admitted 449 new students, an increase of 149 over 1964, increasing the total enrollment to 1,082 students and 211 full time lecturers. At present, Chiengmai University has four departments: Humanities, Natural Sciences, Social-Sciences and Medical Sciences. [illegible] transfered from the University of Medical [illegible] Chiengmai Hospital during the year under review. In the near future Departments of Engineering, Agriculture, Architecture, and Education are planned to be opened. Upon the completion of additional facilities in 1967, the University will be able to accomodate 1,400 students and an additional 140 faculty members. Long range plans for this University also include the establishment of a graduate school and research institute.

12.14 Another regional university which has began operations since 1964, is the University of the Northeast at Khon Kaen. The major objective of this University is to produce graduates in the fields of engineering and agriculture which are in short supply at present. At the end of 1965, construction work completed include the Department of Engineering building, the Department of Natural Sciences and Department of Arts building, two dormitories and 14 auxiliarly buildings. During 1965, the Rector's Administrative building and 63 of the faculty members' residential buildings were under construction. The department of Agriculture building was also under construction with financial assistance of







Campus of the University of the Northeast
at Khon Kaen

the New Zealand Government. In 1965, 214 students registered in the Departments of Agriculture and Engineering were temporarily placed in the Departments of Medical Science, Chulalongkorn University and Kasetsart University. In 1966, these students will be moved to Khon Kaen. With the completion of construction work in 1967, this University will be able to accomodate 400 students.

12.15 The establishment of the University of the Northeast received much attention from many foreign governments, particularly Canada and New Zealand which will render financial and technical assistances.

12.16 The establishment of these regional universities will contribute a great deal in the creation of highly skilled manpower in specialized fields and at the same time relieve the overcrowding problem in the Universities in the Bangkok area. The major bottleneck to expansion is the shortage of qualified faculty members. A long range plan to solve this problem has been formulated. This plan provides for students who get scholarships abroad, under assistance programmes, to join teaching staffs upon their return.

12.17 During 1965, major improvements were accomplished in other universities. These improvements include the construction of new buildings, extension of laboratories as well as the increase in number of the teaching staff of both Thai and foreign. In 1965, Chulalongkorn University admitted 1958 new students with the total of 643 full time lecturers. It was estimated that there will be 1,065 graduates during the academic year 1965.

12.18 Many improvements have also been made in Thammasart University. During the academic year 1965, Thammasart University admitted 2,157 new students adding to the total enrollment of 27,881 students. It is expected that there will be 2,819 graduates during the academic year 1965. Preparation was also underway for the purchase of 900 rai of land for the extension of Thammasart University at Tambol Kannabang, Amphur Bankapi of Bangkok.

12.19 As regard the expansion of the University of Medical Science, during the year under review, the University of Medical Science admitted

519 new students adding to the total enrollment of 3,022 students. There will be 386 graduates in the academic year 1965. Preparation has also been made for the establishment of a new medical school at Phyathai Road with assistance from the Rockafeller Foundation. The construction work will begin in 1966 and upon completion the new medical school will be able to produce 50 doctors per year.

12.20 Acceleration of work has been made on the improvement and expansion of Kasetsart University. A loan application has been presented to the IBRD for financing the improvement and expansion of various faculties. Financial assistance has also been requested from the U.N. Special Fund for the establishment of a graduate school in the Faculty of Forestry. During the year under review Kasetsart University admitted 543 new students adding to the total of 2,521 students. There will be 452 graduates in the academic year 1965.

12.21 The University of Fine Arts will be moved to Nakorn Pathom by the year 1967 in order to provide more room for further expansion. During 1965 the University of Fine Arts admitted 112 new students adding to the total enrollment of 430 students.

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